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# INITIAL ASSESSMENT STUDY OF NS MAYPORT FL

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ENVIRONMENTAL SCIENCE AND ENGINEERING

MAY 1986

# INITIAL ASSESSMENT STUDY OF NAVAL STATION MAYPORT, FLORIDA

NEESA 13-104

NAVAL ENERGY AND ENVIRONMENTAL SUPPORT ACTIVITY
Port Hueneme, California 93043

# INITIAL ASSESSMENT STUDY

# NAVAL STATION MAYPORT,
# FLORIDA

UIC N60201

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# EXECUTIVE SUMMARY

This report presents the results of the Initial Assessment Study (IAS) conducted at Naval Station (NAVSTA) Mayport, Florida. The purpose of an IAS is to identify and assess sites posing a potential threat to human health or to the environment due to contamination from past hazardous materials operations.

NAVSTA Mayport was established in 1942 on approximately 700 acres of land. The original mission of the station included use by patrol craft, target and rescue boats. The station was placed in caretaker status from 1946 to 1948. In 1948 the station reopened, and in 1952 an aircraft carrier was assigned. NAVSTA Mayport is presently the homeport for 34 surface ships and now occupies 3,286 acres. General wastes generated by the facility are those normally associated with ship and on-shore maintenance activities.

The terrain at NAVSTA Mayport is almost flat, with over 90 percent of the installation below 10 feet mean sea level. The highest areas on the installation are near 30 feet above mean sea level. Surface runoff from NAVSTA Mayport enters the Mayport basin, St. Johns River, Lake Wonderwood, Sherman Creek, Pablo Creek, Chicopit Bay, and the Atlantic Ocean. One of the most significant surface features of the station is the approximately 1,667 acres of salt marsh on the southern and western areas.

The surface soils on NAVSTA Mayport are mostly sand, shell and clay, with organic peat in the salt marsh areas. These soils overlie a thick sequence of flat-lying, unconsolidated deposits of sands, silts, and clays, which overlie a thick sequence of marine carbonate rocks. Three aquifers are contained in the geologic column: the water table aquifer (10 to 40 feet below land surface); the secondary artesian aquifer (40 to 400 feet below land surface), and the deep (Floridan) aquifer (400 feet below land surface). The shallow aquifer, which is not used as a source of potable water, is the most susceptible to contaminant infiltration and migration. The secondary artesian aquifer, which contains a confining layer of clay, separates the shallow aquifer from the deeper Floridan aquifer. Sand lenses in the confining clay layer contain the available water found in the secondary artesian aquifer.

Neither the shallow ground water nor the surface water downgradient from NAVSTA Mayport is used as a public source of potable water. Due to the confining layer formed by the secondary artesian aquifer formation, no potential exists for contaminants to enter the deeper Floridan Aquifer, which is used as a source of potable water. Therefore, the primary receptors would be plants and animals utilizing surface waters rather than humans utilizing ground water.


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# FOREWORD

The Department of the Navy developed the Navy Assessment and Control of Installation Pollutants (NACIP) Program to identify and control environmental contamination resulting from past use and disposal of hazardous substances at Navy and Marine Corps installations. The NACIP Program is part of the Department of Defense Installation Restoration Program and is similar to the Environmental Protection Agency's "Superfund" Program authorized by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

In the first phase of the NACIP Program, a team of scientists and engineers conducts an Initial Assessment Study (IAS). The IAS team collects and evaluates evidence of contamination that may pose a potential threat to human health or to the environment. The IAS includes a review of archival and activity records, interviews with activity personnel, and an on-site survey of the activity. This report documents the findings of an IAS at Naval Station (NAVSTA) Mayport, Florida.

Sixteen sites were identified during the IAS. Further Confirmation Studies under the NACIP Program are recommended for eight sites at NAVSTA Mayport. Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), will assist NAVSTA Mayport in implementing the recommendations.

Questions regarding this report should be referred to NEESA Code 112N at AUTOVON 360-3351, FTS 799-3351, or commercial (805) 982-3351. Questions concerning confirmation work or other follow-on efforts should be referred to SOUTHNAVFACENGCOM at AUTOVON 794-5510, FTS 679-5510, or commercial (803) 743-5510.

R.S. Moreau, LCDR, CEC, USN
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ACKNOWLEDGEMENT

The Initial Assessment Study (IAS) team of Environmental Science and Engineering, Inc. (ESE) expresses its appreciation for guidance and assistance throughout this study provided by personnel of Naval Energy and Environmental Support Activity (NEESA); Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM); and Naval Station Mayport, Florida. In particular, the IAS team acknowledges contributions by the following people:

Carlos Rosado, NAVSTA Mayport

Lieutenant Michael Blount, NEESA

James Malone, SOUTHNAVFACENGCOM

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# CHAPTER 1. INTRODUCTION

1.1 PROGRAM BACKGROUND. Past hazardous waste disposal methods, although acceptable at the time, have often caused unexpected long-term problems through release of hazardous pollutants into the soil and ground water. In response to a growing recognition of these problems, Congress directed the U.S. Environmental Protection Agency (EPA) to develop a comprehensive national program to manage past disposal sites. The program is outlined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of December 1980.

1.1.1 DOD Program. Department of Defense (DOD) efforts in this area preceded the nationwide CERCLA program. In 1975, the U.S. Army developed for DOD a pilot program to investigate past disposal sites at military installations. DOD defined the program as the Installation Restoration Program in 1980 and instructed the services to comply with program guidelines.

1.1.2 Navy Program. The Navy manages its part of the program, the Navy Assessment and Control of Installation Pollutants (NACIP), in three phases. Phase one, the Initial Assessment Study (IAS), identifies potential threats to human health or to the environment caused by past hazardous substance storage, handling, or disposal practices at naval activities. Phase two, the Confirmation Study, verifies or characterizes the extent of contamination present and provides additional information regarding migration pathways. Phase three, the Remedial Measure, provides the required corrective measures to mitigate or eliminate confirmed problems.

1.2 AUTHORITY. The Chief of Naval Operations (CNO) initiated the NACIP Program in OPNAVNOTE 6240 of 11 September 1980, superseded by OPNAVINAVSTAT 5090.1 of 26 May 1983. The Naval Facilities Engineering Command (NAVFACENGCOM) manages the program within the existing structure of the Naval Environmental Protection Support Service (NEPSS), which is administered by the Naval Energy and Environmental Support Activity (NEESA). NEESA conducts the program's first phase, the IAS, in coordination with NAVFACENGCOM Engineering Field Divisions (EFDs). Activities are selected for an IAS by CNO, based on recommendations by NAVFACENGCOM, the regional EFDs, and NEESA. Approval of Naval Station (NAVSTA) Mayport, Florida, for an IAS is contained in CNO letter Ser 451/5U393185 of 15 March 1985.

1.3 SCOPE.

1.3.1 Past Operations. The NACIP Program focuses attention on past hazardous substance storage, use, and disposal practices on Navy property. Current practices are regularly surveyed for conformity to State and Federal regulations and, therefore, are not included in the

scope of the NACIP Program. The IAS report addresses operational non-hazardous disposal and storage areas only if they were hazardous waste disposal or storage areas in the past. Current operations are investigated solely to determine what types and quantities of chemicals or other materials were used and what disposal methods were practiced in the past.

1.3.2 Results. If necessary, an IAS recommends Remedial Measures to be performed by the activity or EFD, or recommends Confirmation Studies to be administered by the EFD under the NACIP Program. Based on these recommendations, NAVFACENGCOM schedules Confirmation Studies for those sites determined by scientific and engineering judgment to be potential hazards to human health or to the environment.

1.4 INITIAL ASSESSMENT STUDY.

1.4.1 Records Search. The IAS begins with an investigation of activity records followed by a records search at various Government agencies, including EFDs, national and regional archives and records centers, and United States Geological Survey (USGS) offices. In this integral step, study team members review records to assimilate information about the activity's past missions, industrial processes, waste disposal records, and known environmental contamination. Examples of records include activity master plans and histories, environmental impact statements, cadastral records, and aerial photographs. Appendix A lists the agencies contacted during this study.

1.4.2 On-Site Survey. After the records search, the study team conducts an on-site survey to complete documentation of past operations and to identify potentially contaminated areas. With the assistance of an activity point-of-contact, the team inspects the activity during ground and aerial tours and interviews long-term employees and retirees. The on-site survey for NAVSTA Mayport was conducted from 7 October to 11 October 1985; information in this report is current as of those dates.

Information obtained from interviews is verified by data from other sources or from corroborating interviews before inclusion in the report. If information for certain sites is conflicting or inadequate, the team may collect samples for clarification.

Quantities of contaminants disposed of by the installation are estimated from information provided by interviewees and, in rare cases, from information obtained from actual records. Because these numbers are estimates, they should be used with appropriate precautions.

1.4.3 Confirmation Study Ranking System. With information collected during the study, team members evaluate each site for its potential hazard to human health or to the environment. A two-step Confirmation Study Ranking System (CSRS), developed at NEESA, is used to

systematically evaluate the relative severity of potential problems. The two steps of the CSRS are a flowchart and a numerical ranking model. The first step, the flowchart, is based on type of waste, containment, and hydrogeology. This step eliminates innocuous sites from further consideration. If the flowchart indicates that a site poses a potential threat to human health or to the environment, the second step, the model, is applied. This model assigns a numerical score from 0 to 100 to each site. The score reflects the characteristics of the wastes, the potential migration pathways from the site, and possible contaminant receptors on and off the activity.

1.4.4 Site Ranking. After scoring a site, engineering judgment is applied to determine the need for a Confirmation Study or Remedial Measures. At sites recommended for further work, CSRS scores are used to rank the sites in a prioritized list for scheduling projects. For a more detailed description, refer to NEESA 20.2-042, Confirmation Study Ranking System.

1.4.5 Confirmation Study Criteria. A Confirmation Study is recommended for sites at which: (1) sufficient evidence exists to indicate the presence of contamination and (2) the contamination poses a potential threat to human health or to the environment.

1.5 CONFIRMATION STUDY. Generally, the EFD conducts the Confirmation Study in two phases--verification and characterization. In the verification phase, short-term analytical testing and monitoring determines whether specific toxic and hazardous materials, identified in the IAS, are present in concentrations considered to be hazardous. Normally, the IAS recommends verification-phase sampling and monitoring. The design of the characterization phase usually depends on the results from the verification phase. If required, a characterization phase, using longer term testing and monitoring, provides more detailed information concerning the horizontal and vertical distribution of contamination migrating from sites, as well as site hydrogeology. If sites require Remedial Measures or additional monitoring programs, the Confirmation Study recommendations include the necessary planning information for the work, such as design parameters.

1.6 IAS REPORT CONTENTS. In this report, the significant findings and conclusions from the IAS are presented in Chapter 2. Recommendations are presented in Chapter 3. Chapter 4 describes general activity information, history, biology and physical features. Chapters 5 through 8 trace the use of chemicals and hazardous materials, from storage and transfer, through manufacturing and operations, to waste processing and disposal. Chapters 4, 5, 6, 7, and 8 provide detailed documentation to support the findings and conclusions in Chapter 2. A list of abbreviations used throughout this report is presented as Appendix B. Figure 1-1 shows the location of NAVSTA Mayport, Florida. The map of NAVSTA Mayport is presented in Appendix C.

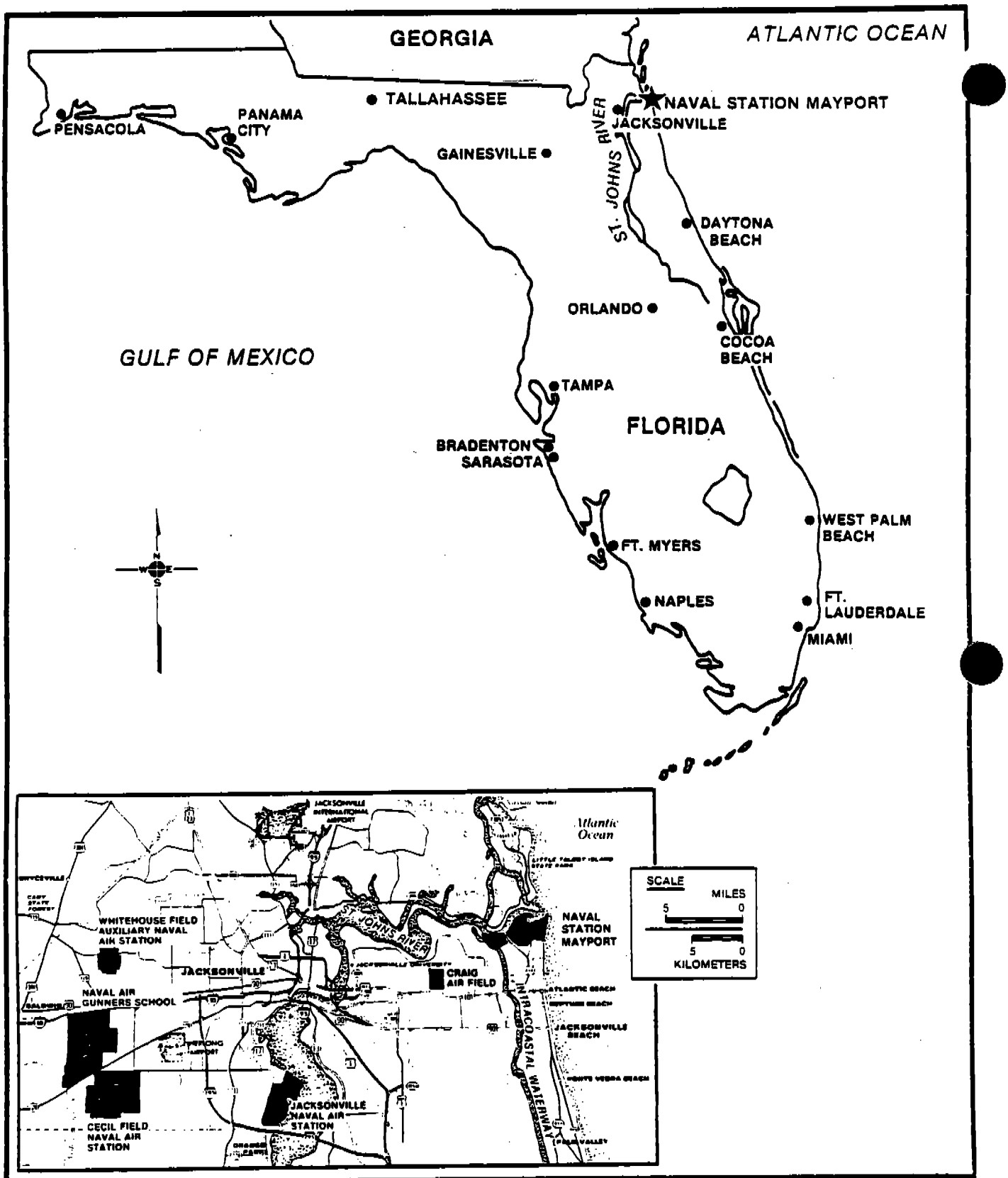



**Figure 1-1**
**LOCATION OF NAVAL STATION MAYPORT**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

# CHAPTER 2. SIGNIFICANT FINDINGS AND CONCLUSIONS

2.1 INTRODUCTION. This chapter summarizes the significant findings and conclusions developed by the Initial Assessment Study (IAS) team for Naval Station (NAVSTA) Mayport, Florida. Sixteen sites at NAVSTA Mayport were identified as areas where hazardous materials were potentially disposed of or spilled. These sites are shown in Figure 2-1 and described in Table 2-1. Based on reviews of available information, the judgment of the IAS team is that nine sites at NAVSTA Mayport pose a potential threat to human health or to the environment. Eight of these sites warrant a Confirmation Study or Remedial Measures under the Navy Assessment and Control of Installation Pollutants (NACIP) program; the ninth site is currently undergoing closure in accordance with Resource Conservation and Recovery Act (RCRA) regulations. Recommendations for Confirmation Studies are described in Chapter 3.

2.2 POTENTIAL CONTAMINANT MIGRATION AND RECEPTORS.

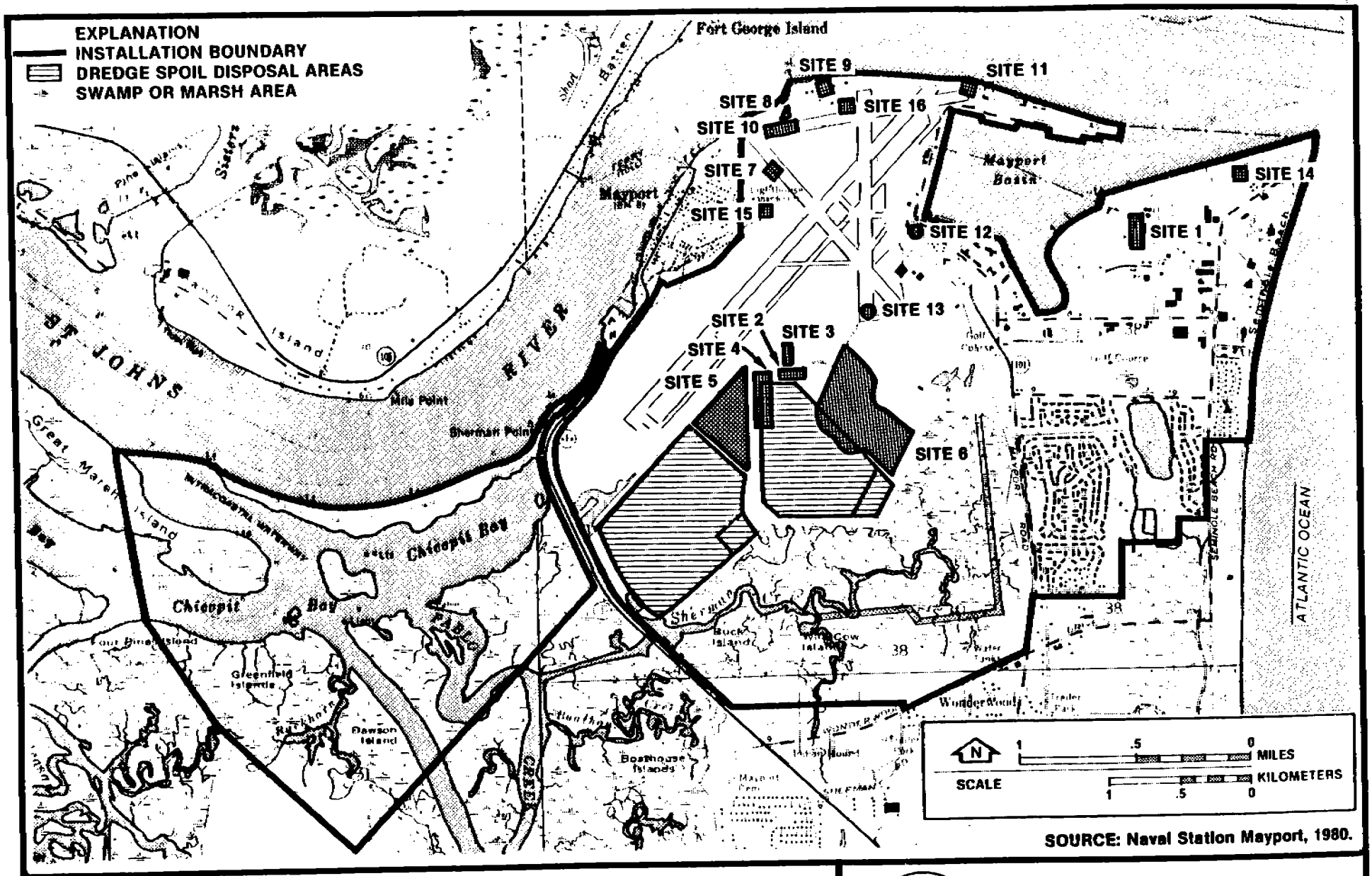
2.2.1 Potential for Contaminant Migration. Contaminant migration can occur in surface water through streams and ditches or in ground water. Ground water can discharge to surface water bodies such as streams, ditches, lakes, and bays.

The potential for contaminant migration in ground water is related to the physical properties of the aquifer, the chemical properties of the contaminant, and the hydraulic gradient. The velocity at which ground water moves may be estimated from Darcy's law, which equates velocity to hydraulic conductivity, hydraulic gradient, and porosity of the aquifer material. The horizontal velocities of ground water at NAVSTA Mayport were estimated at up to four feet per day, depending on the type of aquifer materials, as described in Chapter 4.

Contaminants at NAVSTA Mayport can migrate both by surface water and by ground water. The most likely pathway of surface water migration is from runoff discharging to the numerous stormwater drainage ditches that enter the Mayport basin, St. Johns River, Sherman and Pablo Creeks (which discharge to Chicopit Bay), Lake Wonderwood, and the Atlantic Ocean.

The shallow ground water would also be a contaminant migration pathway at NAVSTA Mayport. The shallow ground water is confined from the secondary and deep aquifers by clay, silt, and limestone layers. Therefore, vertical migration and contamination of deeper aquifers would not be anticipated. The shallow ground water aquifer (to depths of 40 to 60 feet in some areas) intersects surface water streams and would be expected to be a pathway for the release of contaminants in former landfill areas. The direction of ground water flow in the shallow aquifer on NAVSTA Mayport is highly dependent on the location. In general, the flow direction is toward the nearest surface water body, with the overall station flow direction toward the Atlantic Ocean.

2.2.2 Receptors. The primary contaminant pathways on NAVSTA Mayport are shallow ground water and surface drainage areas. These water resources




SOURCE: Naval Station Mayport, 1980.

**Figure 2-1**
**LOCATION OF POTENTIAL CONTAMINATION SITES ON NAVAL STATION MAYPORT**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

Table 2-1

Description of Potential Contamination Sites on Naval Station Mayport, Florida

| Site Number | Site Name | Years of Operation |
|---|---|---|
| 1 | Landfill A | 1942-1960 |
| 2 | Landfill B | 1960-1964, 1979-1980 |
| 3 | Landfill C | 1963 |
| 4 | Landfill D | 1963-1965 |
| 5 | Landfill E | 1963-1966, 1974-1980 |
| 6 | Landfill F | 1966-1985 |
| 7 | Hazardous Waste Storage Area | 1981-1985 |
| 8 | Waste Oil Pit | 1973-1978 |
| 9 | Fuel Spill Area | 1942-1985 |
| 10 | Defense Reutilization and Marketing Office (DRMO) Storage Yard | 1967-1980 |
| 11 | Neutralization Basin | 1970-1985 |
| 12 | Oily Waste Pipeline | 1942-1985 |
| 13 | Old Fire Fighting Training Area | 1973-1982 |
| 14 | Mercury/Oily Waste Spill Site | 1977-1985 |
| 15 | Old Pesticide Area | 1963-1964 |
| 16 | Transformer Storage Yard | Early 1950s-1985 |

are not used by humans downgradient of the station as sources of potable water. These water resources are used by aquatic life including fish, crabs, and shrimp. These aquatic life, the potential primary receptor of contaminants, are subsequently used as food sources by others, including man. Any contaminants migrating from NAVSTA Mayport could affect both the quantity and quality of aquatic resources surrounding the station. Section 4.4.2 describes threatened species found in the vicinity of NAVSTA Mayport and their potential for being impacted by any migrating contaminants.

## 2.3 SITE DESCRIPTIONS.

2.3.1 Site 1: Landfill A. Site 1 is a landfill that was operated from 1942 to 1960. The site is located east of the Mayport basin, under the area currently occupied by Jacksonville Shipyards, a tenant on NAVSTA Mayport (see Figure 2-2). Site 1 occupies approximately four acres.

The landfill consisted of a series of trenches approximately 15 feet wide, 400 feet long, and eight feet deep. Items disposed of in the trenches included waste oils (potentially containing toxic metals including lead) and mercury, asbestos, paints (containing lead), toluene, mercury lamps, transmission fluids, hydraulic fluids, cleaning solvents, sulfuric acid, lube oil, transformer oil, mercury wastes, plating solutions, batteries, ship bilge, perchloroethylene, methylene chloride, pesticide cans [chlordane, heptachlor, 2,4-dichlorophenoxyacetic acid (2,4-D), dichlorodiphenyltrichloroethane (DDT), and others], magnaflux dye, penetrants, photo processing wastes, sanitary garbage, and construction rubble. It is estimated that the site received approximately 190,000 gallons of liquid industrial wastes during the years of operation. Combustible items in the landfill were burned each day to reduce the volume of the fill.

The site is located less than 500 feet from the Mayport basin entrance into the St. Johns River, in an area where the soils are sandy and considered permeable. Contamination of the soils and contaminant migration in the water table aquifer would be possible at this site. Contaminants would migrate in the shallow ground water in a northeasterly direction, entering the St. Johns River. Receptors in this area would be aquatic life (fish and shrimp) that are used by man as food. Due to the nature of the materials disposed of at this site, the potential for migration, and the presence of receptors, a Navy Assessment and Control of Installation Pollutants (NACIP) Confirmation Study is recommended.

2.3.2 Site 2: Landfill B. Site 2 is a landfill that was operated as a trench and fill landfill from 1960 to 1964 and as an area fill landfill from 1979 to 1980. The site is located north of the easternmost dredge spoil disposal area (see Figure 2-3). The area was subsequently covered with soil, then paved, and an ordnance storage yard area has now been constructed over the landfill area. The landfill area is approximately two acres in size.

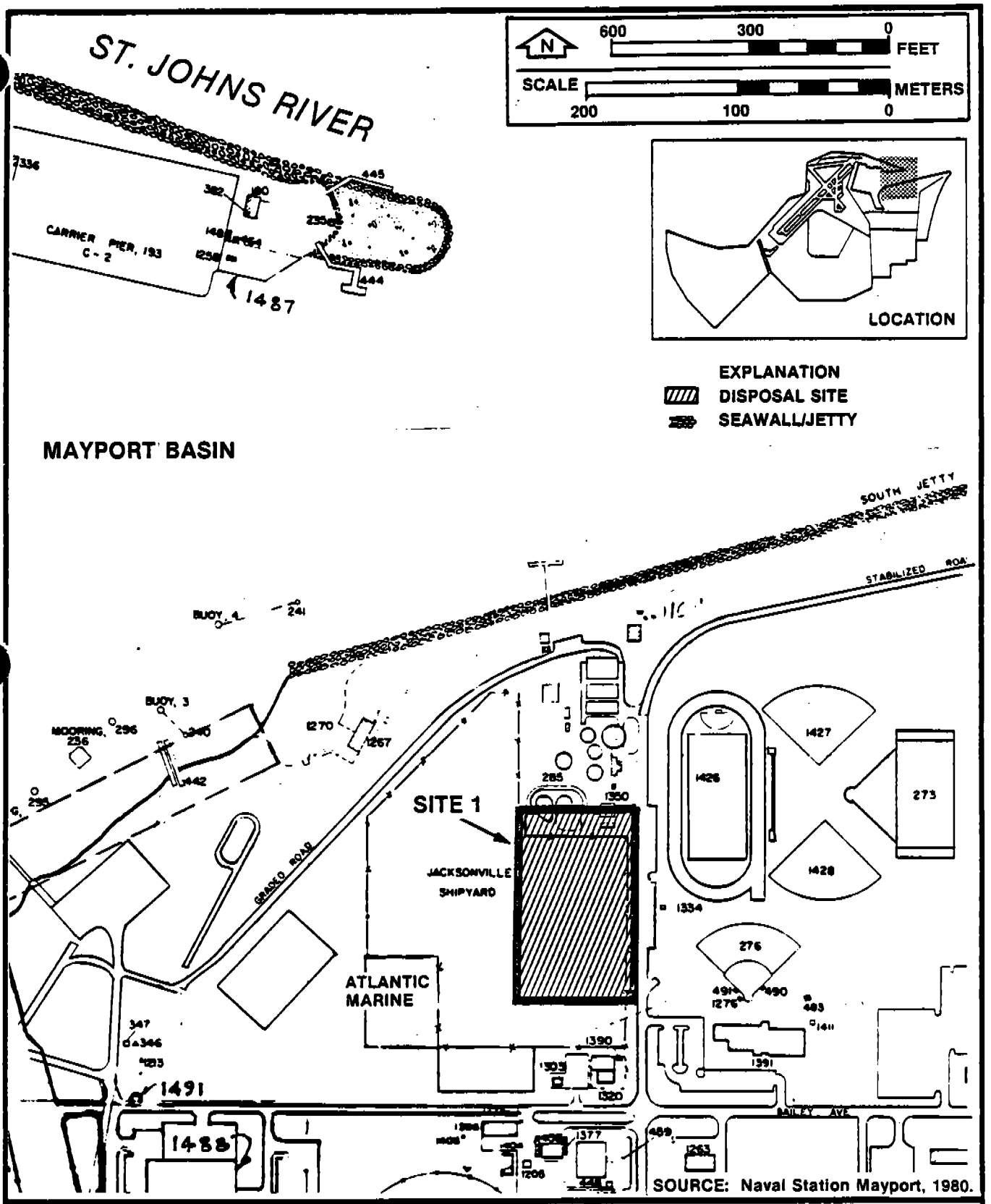



Figure 2-2
LOCATION AND APPROXIMATE AREAL EXTENT OF SITE 1

INITIAL ASSESSMENT STUDY
NAVAL STATION
MAYPORT, FLORIDA

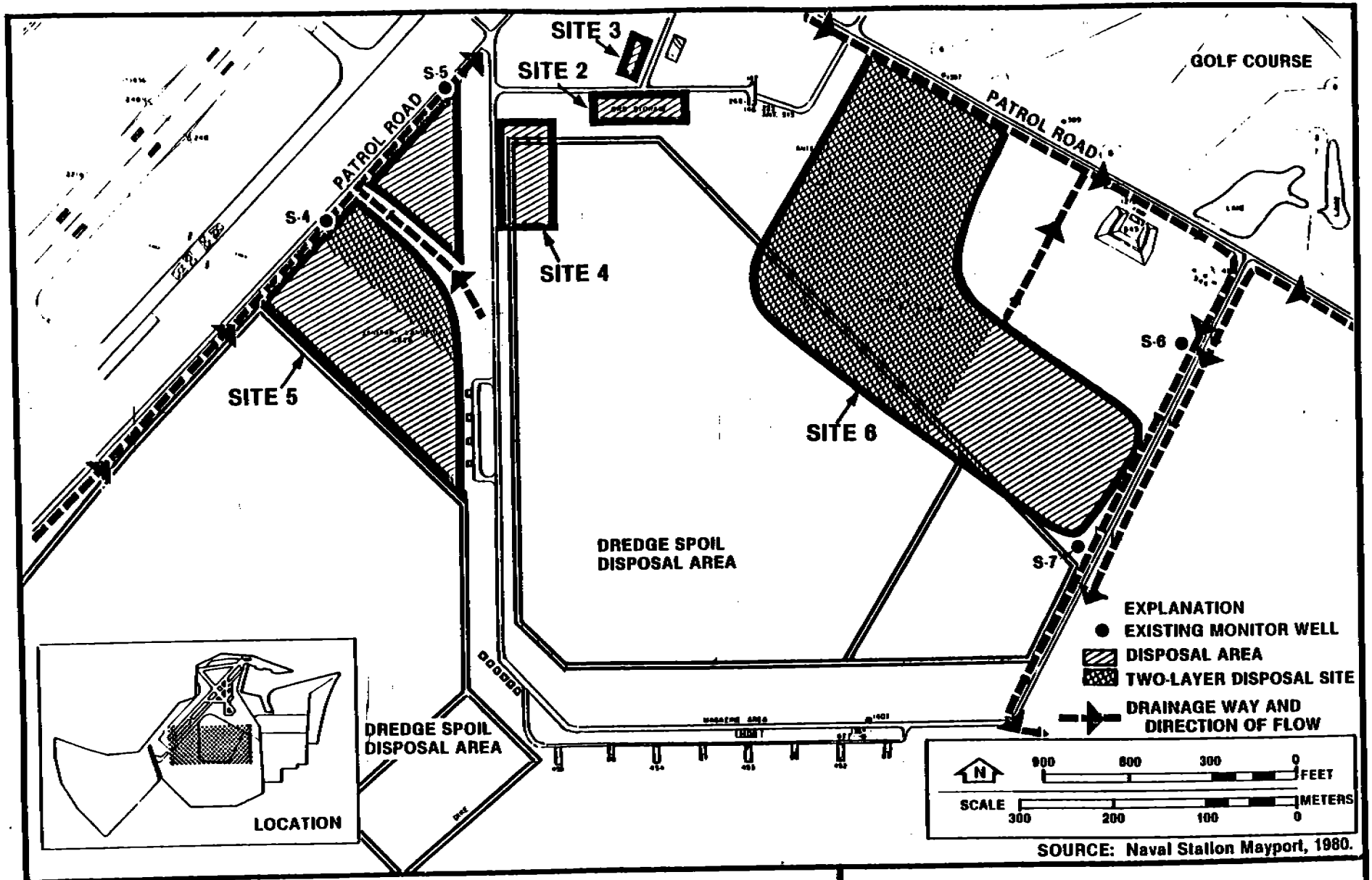



Figure 2-3
LOCATION AND APPROXIMATE AREAL EXTENT OF
SITE 2, SITE 3, SITE 4, SITE 5, AND SITE 6

INITIAL ASSESSMENT STUDY
NAVAL STATION
MAYPORT, FLORIDA

The landfill consisted of a series of trenches approximately 15 feet wide, 300 feet long, and eight feet deep. The trenches intersected the water table. Combustible items floating on water in the trenches were burned daily. Items disposed of in the landfill included waste oils (potentially containing toxic metals including lead) and mercury from shipboard and onshore activities, asbestos, paints (containing lead), toluene, mercury lamps, transmission fluids, hydraulic fluids, cleaning solvents (chlorinated and nonchlorinated), sulfuric acid, lube oil, transformer oil, mercury wastes, plating solutions, batteries, ship bilge, perchloroethylene, methylene chloride, pesticide containers (chlordane, 2,4-D, heptachlor, DDT, and many others), magnaflux dye, penetrants, photo processing wastes, construction rubble, and sanitary wastes. Numerous drums from ships were disposed of in the landfill. Some of the drums containing oil were retrieved by personnel in the Pesticide Department, and the oil was used for mosquito control. It was estimated that approximately 54,000 gallons of liquid industrial wastes, including oils, was disposed of at the site on a yearly basis. Although the landfill was burned on a daily basis, it is estimated that approximately 20 percent of the liquid industrial wastes remained at the site.

The landfill is located in an area where the soils are permeable and contaminants could migrate. The lower portion of the landfill is in the water table aquifer. A drainage ditch is located less than 500 feet from the landfill area. Contaminants in the soils would be expected to migrate toward the drainage ditch especially since the mounded water in the dredge spoil disposal area could serve as a driving force for moving water through the landfill and into the drainage ditches. The primary contaminant receptors in this area would be aquatic life in the surface streams and vegetation using the ground water. Secondary receptors would be man and other animals that use the aquatic life as food sources. Based on the potential for migration and the presence of contaminants, a Confirmation Study under the NACIP Program is recommended for Site 2.

2.3.3 Site 3: Landfill C. Site 3 is a landfill that was operated only in 1963. The site is located north of Site 2 (see Figure 2-3) and consists of a trench (20 feet by 100 feet by 8 feet) that was used for the one-time disposal of scrap metal and construction material removed from a Navy facility near Green Cove Springs, Florida. Reportedly, no materials buried at the site were hazardous.

Because no hazardous or toxic materials were reportedly buried at the site, Site 3 is not recommended for a Confirmation Study under the NACIP Program.

2.3.4 Site 4: Landfill D. Site 4 is a landfill that was operated from 1963 to 1965. The site is located west of Site 2 (see Figure 2-3) and extends under the northwestern corner of the easternmost dredge spoil disposal area on NAVSTA Mayport. Site 4 occupies approximately three acres.

The landfill consisted of several pits (estimated eight) constructed by a dragline. The disposal pits at the site are approximately 40 feet by 40 feet in size and eight feet deep. The pits intersect the water table aquifer. Items were dumped into standing water contained in the pits. Items disposed of at the site included numerous drums of waste oils (potentially containing lead) and mercury from shipboard and on-shore activities, asbestos, paints (containing lead), toluene, mercury lamps, transmission fluids, hydraulic fluids, cleaning solvents (chlorinated and nonchlorinated), sulfuric acid, lube oil, transformer oil, mercury wastes, plating solutions, batteries, ship bilge, perchloroethylene, methylene chloride, pesticide containers (chlordane, 2,4-D, heptachlor, DDT, and many others), magnaflux dye, penetrants, photo processing wastes, sanitary wastes, and construction rubble. Combustible items were burned on a daily basis at this landfill area. It is estimated that approximately 54,000 gallons per year of liquid industrial wastes was disposed of at the site, with approximately 22,000 gallons remaining in the soils after burning. Some drums of waste oil were recovered and used by Pesticide Department personnel for mosquito control.

The site is located in an area where the soils are permeable. The bottom portion of the area is located in the water table aquifer. A drainage ditch located less that 500 feet to the north of site would be the expected migration direction of the ground water. Ground water flow in a northerly direction would be expected due to the location of the site hydraulically downgradient from the dredge spoil disposal area. Potential receptors for contaminants migrating from Site 4 would be trees and surface vegetation with roots in the water table, or aquatic vegetation and aquatic animals residing in the drainage ditches and marshes to the north, east, and west of the site. Based on the types of materials disposed of at the site and the presence of migration pathways and receptors, Site 4 is recommended for a Confirmation Study under the NACIP Program.

2.3.5 Site 5: Landfill E. Site 5 is a landfill area that was operated as a trench and fill landfill from 1963 to 1966 and as an area fill landfill from 1974 to 1980. The site is located west of Site 4 and north of the NAVSTA Mayport westernmost dredge spoil disposal area (see Figure 2-3). The site actually consists of two areas, occupying a total of approximately 11 acres.

The trenches at Site 5 were constructed with a dragline and are approximately 15 feet wide, 750 feet long, and eight feet deep. They are constructed within the water table aquifer. Items were disposed of into the trenches, which contained standing water. Items disposed of at the site included drums of waste oil (potentially containing lead) and mercury from shipboard and on-shore activities, asbestos, paints (containing lead), toluene, mercury lamps, transmission fluids, hydraulic fluids, cleaning solvents (chlorinated and nonchlorinated), sulfuric acid, lube oil, transformer oil, mercury wastes, plating solutions, batteries, ship bilge, perchloroethylene, methylene chloride, pesticide

containers (chlordane, 2,4-D, heptachlor, DDT, and many others), magnaflux dye, penetrants, photoprocessing wastes, sanitary wastes, and construction rubble.

Combustible items in the landfill during the early years of operation (1963 to 1966) were ignited on a daily basis. Some drums of waste oil were retrieved from the pits by Pesticide Department personnel and the oil used in mosquito control. It is estimated that approximately 54,000 gallons of liquid wastes was disposed of at the area on a yearly basis and approximately 97,000 gallons remained after some was burned during the life of Landfill E.

The site is located in an area where the soils are permeable. A drainage ditch located less than 100 feet north of the site would be the expected direction of migration of the ground water. A previous site investigation (Geraghty and Miller, 1983) indicated that migration from this site was possible, and two monitor wells were installed. Although no contaminants were found in the previous ground water samples, the wells may not have been installed in areas where contaminants in the ground water would have been intercepted. The primary receptors for contaminants from Landfill E would be aquatic life in the surface streams. Secondary receptors would be animals, including man, which utilize the aquatic life as a food source. Based on the quantities and types of materials disposed of at the site, the potential for migration, and the presence of receptors, Site 5 is recommended for a Confirmation Study under the NACIP Program.

2.3.6 Site 6: Landfill F. Site 6 is located between the rifle range and the easternmost dredge spoil disposal area on NAVSTA Mayport (see Figure 2-3). The site was operated from 1966 to 1985. Two types of operations have occurred at the site. The site was originally a trench fill and, after completion of the fill and addition of soil cover, a second on-surface disposal operation occurred. The site is approximately 24 acres in size.

The trenches at the site, which were constructed with a dragline, are approximately eight feet deep, 15 feet wide, and up to several hundred feet long. The trenches intersect the shallow water table aquifer. During usage, the trenches always contained standing water. Items disposed of in the landfill included drums of waste oil (potentially containing lead) and mercury from shipboard and onshore activities, asbestos, paints (containing lead), toluene, mercury lamps, transmission fluids, hydraulic fluids, cleaning solvents (chlorinated and nonchlorinated), sulfuric acid, lube oil, transformer oil, mercury wastes, plating solutions, batteries, ship bilge, perchloroethylene, methylene chloride, pesticide containers (chlordane, 2,4-D, heptachlor, DDT, and many others), magnaflux dye, penetrants, photo processing wastes, sanitary wastes, and construction rubble. It is estimated that a total of 200,000 gallons of liquid industrial wastes was disposed of at Site 6 during operations.

The site is located in an area where the soils are permeable and migration in the water table aquifer is possible. A stand of pine trees located east of the site shows stress (several trees have yellowed needles and are dying). It is unknown if the stress is the result of contaminant migration or some type of tree disease. Contaminants in the ground water would be expected to migrate toward drainage areas located to the east, southeast, and south. In addition, other primary receptors in the area would be aquatic life in the streams and marsh areas. The aquatic life is used as a food source by man and other animal life on and adjacent to NAVSTA Mayport. A previous study (Geraghty and Miller, 1983) indicated the potential for contaminant migration, and two monitor wells were installed on the south side of the site. No contaminants were detected in the ground water; however, the wells may not be located in the proper area to intercept contaminated ground water or contaminants have not yet migrated to those areas. Based on the items disposed of at the site, the potential for migration, and the presence of receptors, a Confirmation Study under the NACIP Program is recommended for Site 6.

2.3.7 Site 7: Hazardous Waste Storage Area. Site 7 is located near Building 1380 on an abandoned asphalt runway (see Figure 2-4). The site was used for hazardous waste storage from 1981 to 1985. The site was also the location of a fire fighting training area in the past (1959 to 1972). The site, approximately 0.1 acre in size, is fenced and secure. The site was used for the storage of electrical transformers and capacitors [potentially containing polychlorinated biphenyls (PCB)], waste oils (potentially containing cadmium, lead, and nickel), and solvents (chlorinated and nonchlorinated). Small spills and occasional leaks of these materials occurred both during use as a hazardous waste storage area and use as a fire fighting training area. It is estimated that less than 100 gallons of waste oil and solvents was spilled when being used as a hazardous waste storage area. It is estimated that 6,000 gallons of fuel was spilled in the area as part of the fire fighting training activities.

NAVSTA Mayport is in the process of closing Site 7 in compliance with RCRA rules and regulations. Therefore, Site 7 is not recommended for a Confirmation Study under the NACIP Program.

2.3.8 Site 8: Waste Oil Pit. Site 8 is located on the western end of the fuel farm, adjacent to the St. Johns River (see Figure 2-5). The site, which is presently covered, consisted of a pit excavated to a depth of approximately six feet. The pit, approximately triangular in shape and 0.2 acre in size, was used from 1973 to 1978 to store waste oily bilge water (potentially containing lead, cadmium, and mercury). In

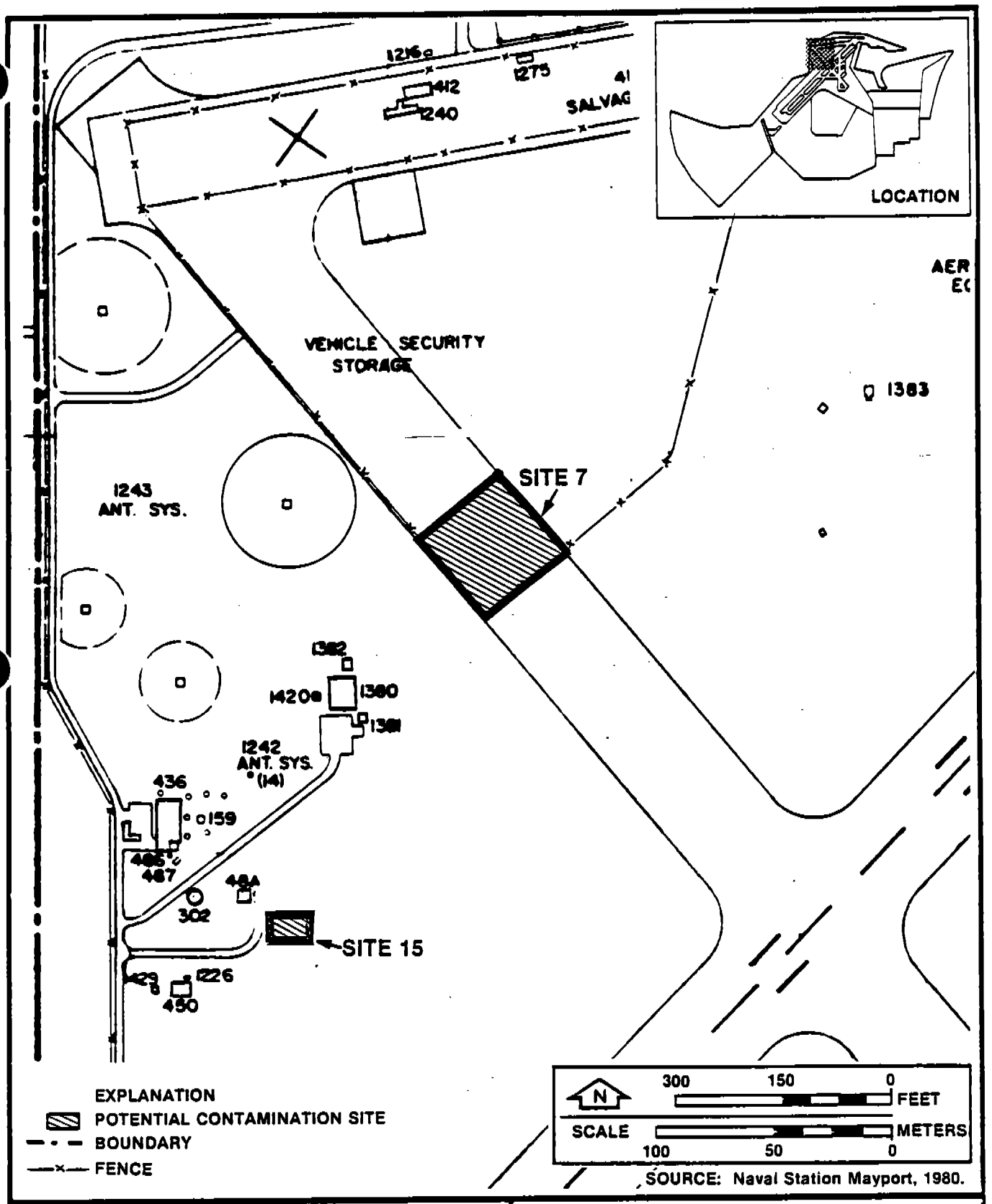



Figure 2-4
LOCATION OF SITE 7 AND SITE 15

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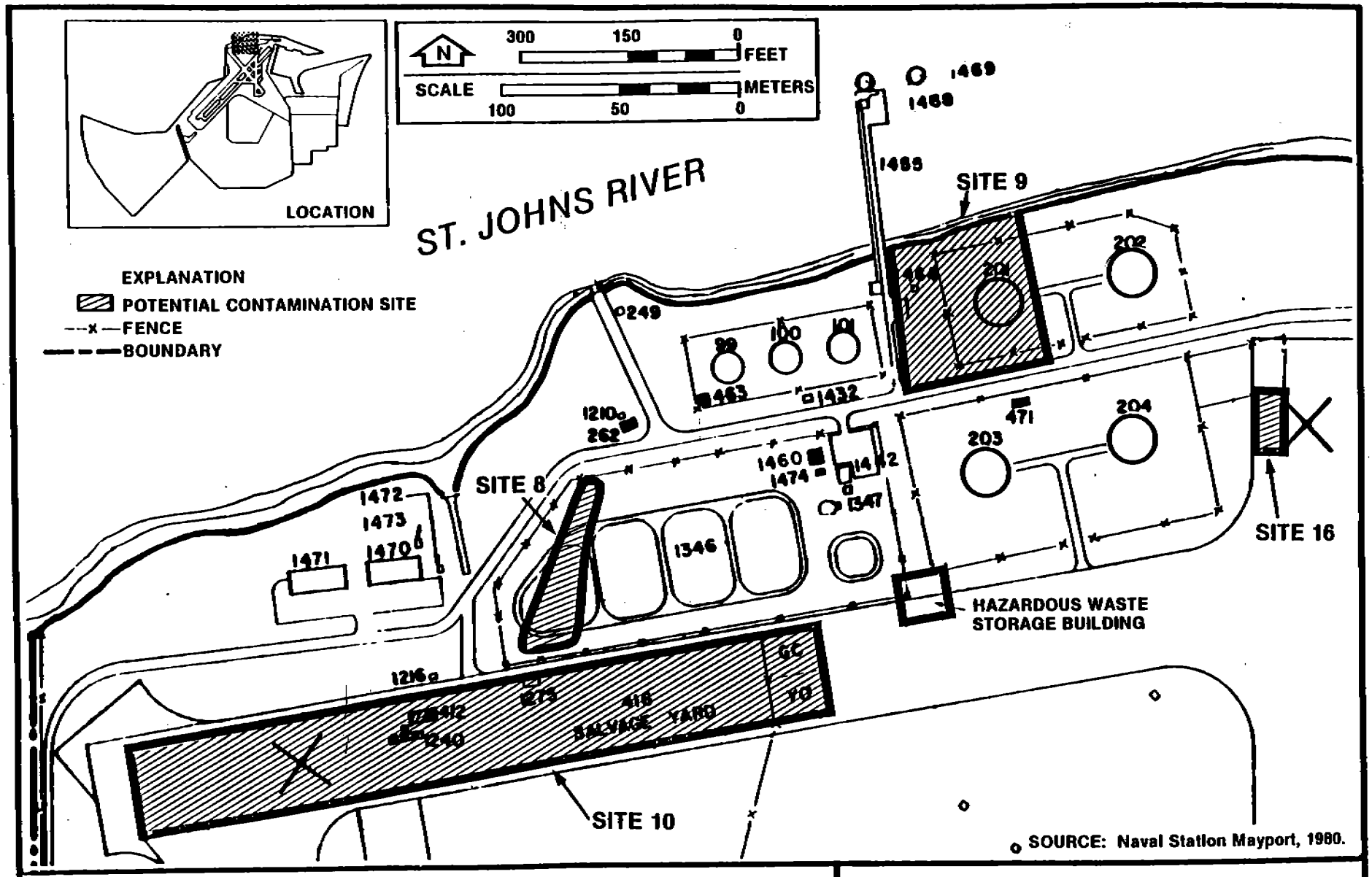



**Figure 2-5**
**LOCATION OF SITE 8, SITE 9, SITE 10, AND SITE 16**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

addition, the site received some waste oils and other items potentially mixed with waste oil including solvents, transformer oils, and pesticides. The site was covered over when new oily waste sludge drying beds were constructed in 1979. During operation, the oil and wastes contained in the pit soaked into the soils. It is estimated that 250,000 gallons of oily bilge waters (mostly water) and several thousand gallons of waste oil were disposed of at this site.

The soils in the area of Site 8 are permeable sands and susceptible to contaminant infiltration and migration. The site is located less than 300 feet from the St. Johns River, and contaminants would be expected to migrate toward the river through the shallow ground water and off the station. Primary receptors for this site would be aquatic life in the St. Johns River. Secondary receptors of potential contaminants would be man and other animals using the aquatic life as food sources. Based on the contaminants disposed of at the site, the potential for migration, and the presence of receptors, Site 8 is recommended for a Confirmation Study under the NACIP Program.

2.3.9 Site 9: Fuel Spill Area. Site 9 is located in the fuel farm area north and west of Tank 201 (see Figure 2-5). This site was recently identified from soil borings that smelled strongly of fuel. Although the source of the fuel is unknown, it may be the result of spills or leaks in the fuel farm area. The quantity of fuel spilled or leaked onto the soils in the area is also unknown. It is estimated that the fuel is either JP-4, JP-5, or diesel fuel-marine (DFM). It is also estimated that less than 3,000 gallons of fuel has been spilled in the general area during operations.

The soils in the area of Site 9 are permeable and susceptible to contaminant infiltration and migration. Contaminants from this area would migrate northerly through the shallow water table aquifer into the St. Johns River. Primary receptors for this site would be aquatic life in the St. Johns River. Secondary receptors of potential contaminants would be man and other animals using the aquatic life as food sources. Based on the known presence of contaminants, the availability of migration pathways, and the presence of receptors, Site 9 is recommended for a Confirmation Study under the NACIP Program.

2.3.10 Site 10: Defense Reutilization and Marketing Office Storage Area. Site 10 is located south of the fuel farm area and Site 8. The site is located on a abandoned asphalt runway and was used as a storage site for all materials that were turned over to DRMO [formerly Defense Property Disposal Office (DPDO)] from 1967 through 1980.

Items stored in the area that may have leaked or spilled include transformer oils (potentially containing PCB), paints (containing lead), and solvents (chlorinated and nonchlorinated). The quantities spilled at the site were estimated at less than 15 gallons per year and a total of less than 200 gallons of liquid wastes during the period of operation of the

site. The items leaked or were spilled at various locations throughout the site and not at one specific area.

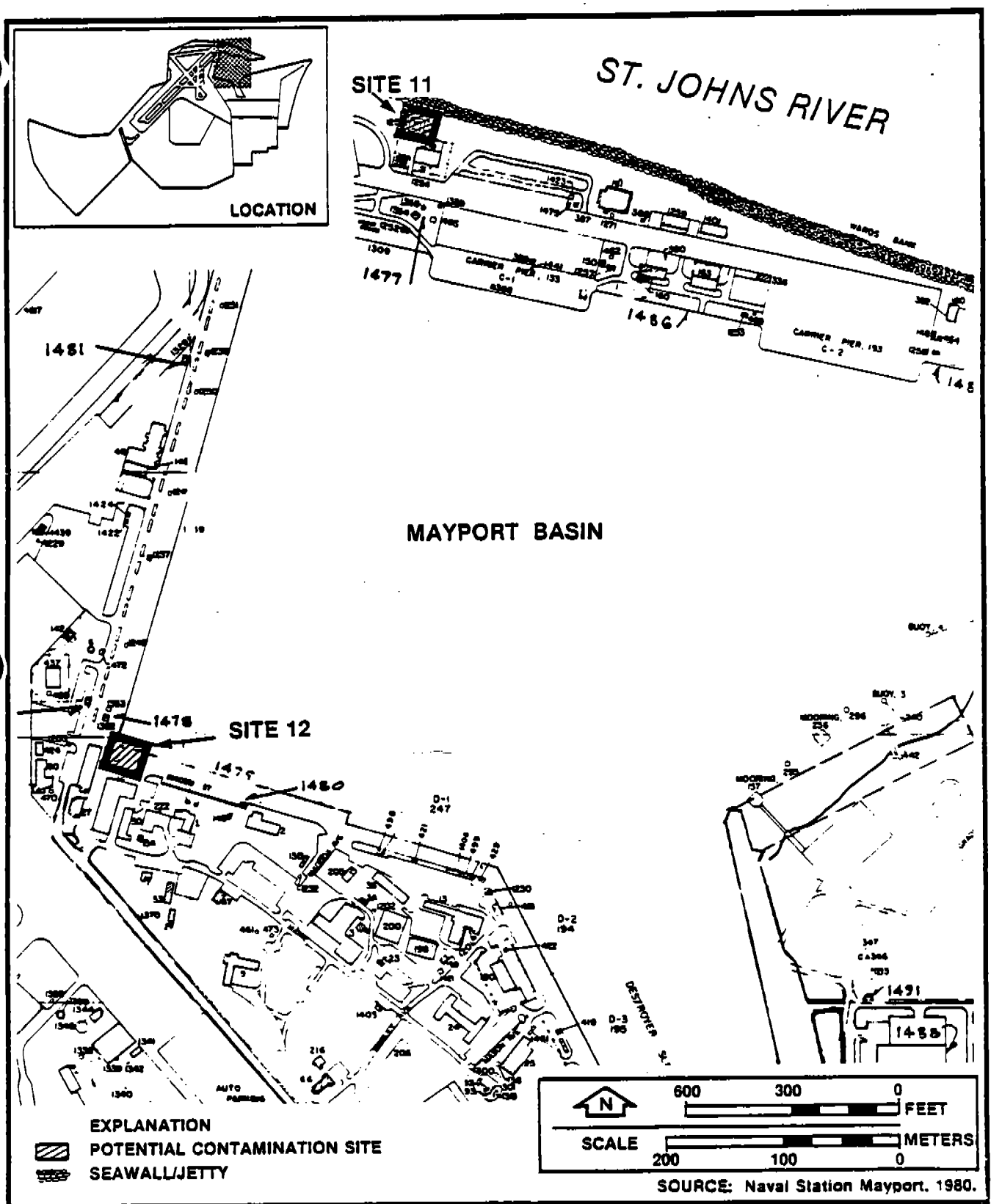
The soils in the area of Site 10 are permeable. The potential migration pathway would be surface runoff toward the St. Johns River. The locations of hazardous materials spills or leaks at the site are widespread and not centrally located. The quantities of materials at each of these locations are considered small (less than five gallons per occurrence) and not likely to adversely impact the aquatic life or terrestrial life around the site. Therefore, Site 10 is not recommended for a Confirmation Study under the NACIP Program.

2.3.11 Site 11: Neutralization Basin. Site 11 is located on the north side of Building 1241 and on the bank of the St. Johns River (see Figure 2-6). The site was constructed to neutralize boiler cleaning wastes prior to discharge into the river. The lined neutralization basin has also been used by ship personnel to dispose of wastewater. The amount of hazardous material that has entered the basin is unknown but has reportedly included solvents and mercuric and chromium wastes. The basin has leaked in the past, and hazardous materials disposed of at the site have entered the soils and the water table aquifer under the basin. It is estimated that 1,000 gallons of hazardous materials has leaked into the soils of the area.

The soils is the area of Site 11 are permeable and provide a pathway for contaminant migration. Any contaminants entering the ground water at Site 11 would migrate toward the St. Johns River. Based on the quantities of hazardous materials that have entered the soils of the area and the probability that any contaminants have already migrated into the river, Site 11 is not recommended for a Confirmation Study under the NACIP Program.

2.3.12 Site 12: Oily Waste Pipeline. Site 12 is located at the intersection of piers A and B, near Building 38 (see Figure 2-6). The site was discovered when oil was reported to be seeping into the Mayport basin. An investigation indicated that the oily waste pipeline was leaking. All of the visibly observed oil-stained soil around the pipeline was excavated, and a leaking valve was repaired. The quantity of oily waste that entered the soils from the leak is unknown. Since the repairs have been completed, small amounts of oil have been occasionally reported in an underground electrical system manhole and also in the storm drain system that discharges to the Mayport basin. These are probably residuals in the soils that were not observed and were removed during the initial repairs and soil cleanup.

The soils in the area of the site are permeable, and contaminants would migrate in the ground water toward the Mayport basin. The quantities of oily wastes remaining in the soils of the area are estimated to be small, and a Confirmation Study under the NACIP Program is not recommended.




SOURCE: Naval Station Mayport, 1980.

Figure 2-6
LOCATION OF SITE 11 AND SITE 12

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2.3.13 Site 13: Old Fire Fighting Training Area. Site 13 is located under the parking area of the new Aircraft Intermediate Maintenance Division (AIMD) building, which is under construction (see Figure 2-7). The site was used as a fire fighting training area from 1973 to 1982. The area consisted of a low, earthen berm constructed on an abandoned asphalt runway. Materials used in the training exercises included waste oil (potentially containing lead), mercury wastes, solvents (chlorinated and nonchlorinated), and other fuels. Fuels (including JP-4, JP-5, and DFM) and other items not combusted during the training exercises remained in the pit or ran off the sides of the runway. It is estimated that 4,800 gallons per year of fuels was disposed of in the pit. It is also estimated that 480 gallons per year remained after the training exercises.

During new construction activities, the area was disturbed to a depth of four to six feet for the construction of a new pipeline. The soils were spread over the area, and the area was paved with asphalt as part of a parking lot.

The soils in the area of Site 13 are permeable and susceptible to migration. The water table aquifer is located less than five feet below ground surface. If any contaminants reached the water table aquifer, they would be expected to migrate to the west and south toward a drainage ditch that leads off the station. The area where potential contaminants are on the soil is covered by an asphalt parking lot. This covering over of the area would reduce the rate of contaminant transport with surface water infiltration. Although a migration pathway exists, the actual quantities of wastes remaining at the site (estimated at less than 4,800 gallons) are mixed and widely spread under the asphalted parking area, and the potential for migration is considered low. Therefore, a Confirmation Study under the NACIP Program is not recommended.

2.3.14 Site 14: Mercury/Oily Waste Spill Site. Site 14 is located west of the Fleet Training Center, Building 1456 (see Figure 2-8). The site consists of two areas located on or adjacent to the concrete pad used for fire fighting training activities. The site was constructed in 1977. One of the two areas at the site was used for the storage of 55-gallon drums containing mercuric nitrate wastes. In the past, drums occasionally rusted out, and the mercuric nitrate solution leached into the soils adjacent to the concrete pad. It is estimated that less than 200 gallons of mercuric waste solutions leaked at the site.

The other area at the site is located around an oil-water separator. The oil-water separation removes oily wastes from wastewaters generated by fire fighting training exercises. In the past, the unit has malfunctioned and contaminated the soils directly behind Building 1456 with oils and oily wastes. It is estimated that approximately 4,000 gallons of oils and oily wastes was spilled at the site.

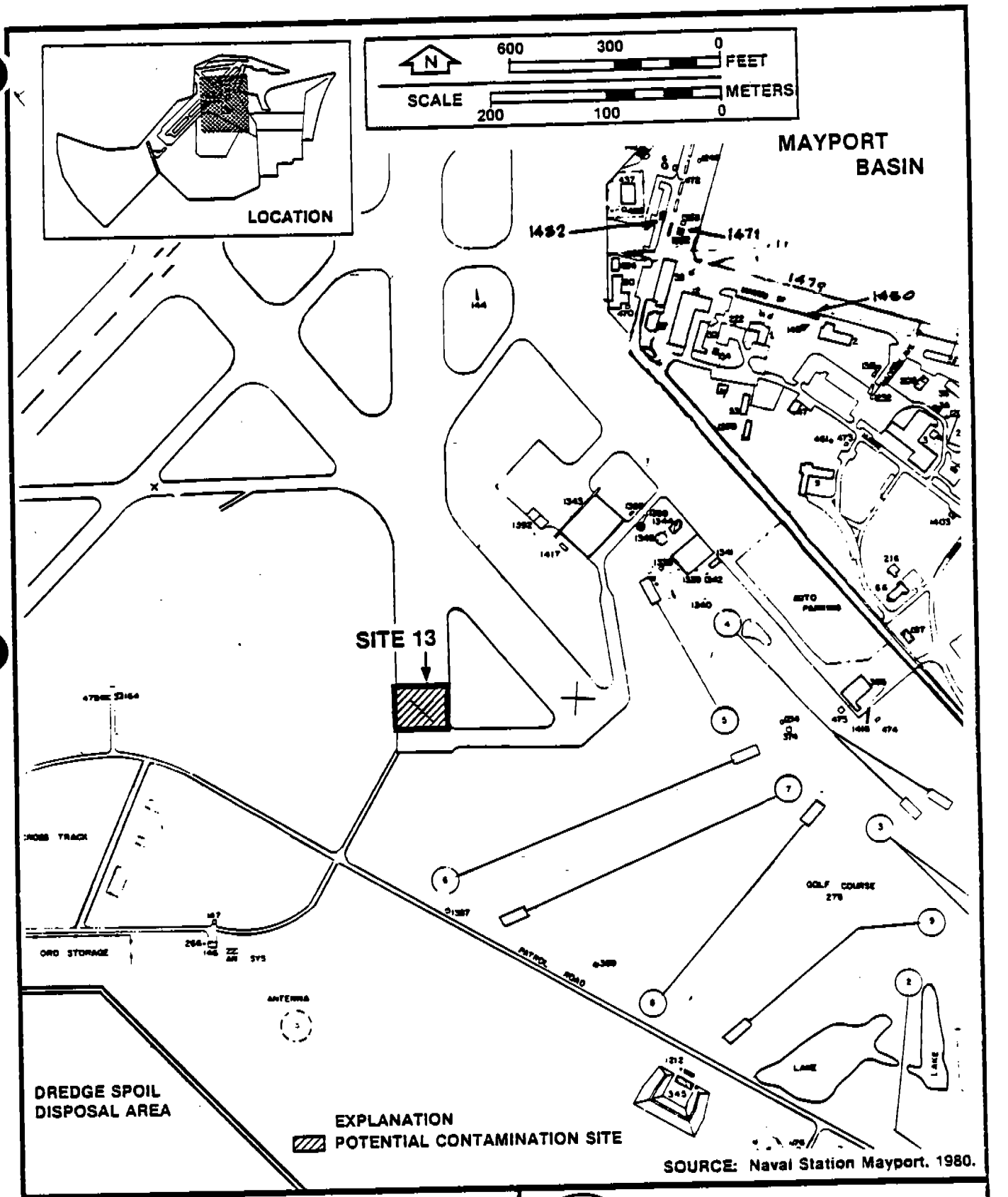


Figure 2-7
LOCATION OF SITE 13

INITIAL ASSESSMENT STUDY
NAVAL STATION
MAYPORT, FLORIDA

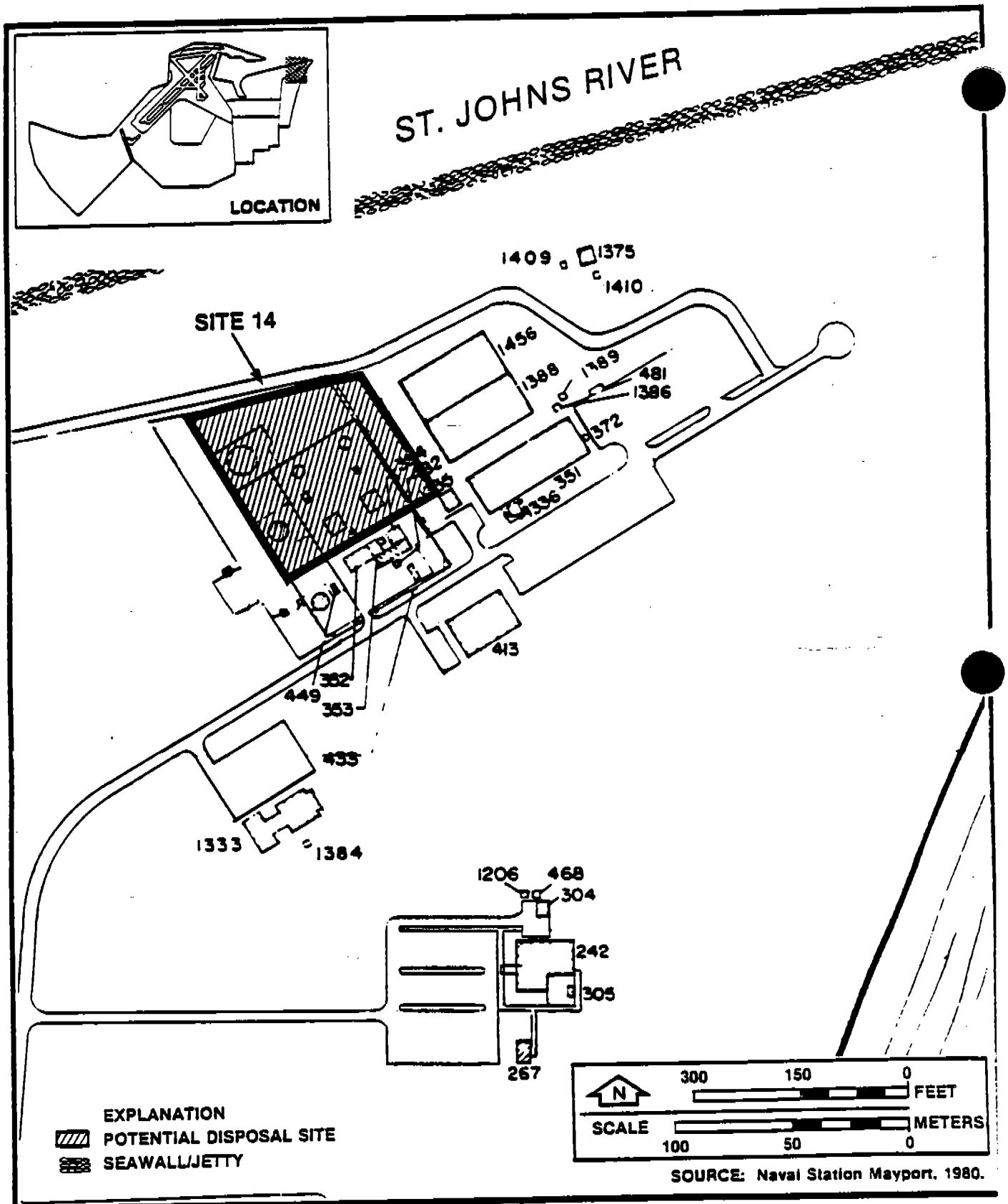


Figure 2-8
LOCATION OF SITE 14

INITIAL ASSESSMENT STUDY
NAVAL STATION
MAYPORT, FLORIDA

The soils in this area of NAVSTA Mayport are permeable and susceptible to contaminant migration. Contaminants could permeate the soils and enter the water table aquifer or migrate by surface runoff. The ultimate receiving body for any migrating contaminants would be the St. Johns River, located less than 200 feet north from the site. The primary receptors for contaminants migrating from Site 14 would be aquatic life in the St. Johns River. The secondary receptors would be man and other animals using the aquatic life as food sources. Based on the presence of migration pathways, the highly toxic nature (mercury wastes) of the potential contaminants, and the presence of receptors, Site 14 is recommended for a Confirmation Study under the NACIP Program.

2.3.15 Site 15: Old Pesticide Area. The old pesticide area was located in former Building 484 on the western side of the station. The area was in use for approximately one year between 1963 and 1964. Pesticides and pesticide application equipment were stored in a shed attached to the southwestern corner of the building. Pesticide mixing and formulating activities were conducted at the job site. The cleaning of spray equipment occurred adjacent to the building. Rinse waters from any washing activities were discarded directly onto the soils of the area. Soils in the area of Site 15 are susceptible to contaminant migration. Contaminants, if present, would migrate in the water table aquifer. The site is located less than 500 feet from the station boundary. The quantities of contaminants spilled at the site are estimated at less than 55 gallons since the site was used for only one year. Therefore, a Confirmation Study under the NACIP Program is not recommended.

2.3.16 Site 16: Transformer Storage Yard. Site 16 is located on the east side of fuel tank farm Tank 204 (see Figure 2-5). The site is located on the asphalt area of an abandoned runway. The area has been used since 1981 to store out-of-service transformers. At the time of the site visit, approximately 30 non-PCB transformers were stored in the area. It is unknown if any PCB transformers were stored in the area in the past (PBC-containing or PCB-contaminated transformers were generally stored at Site 7 or Site 10). Minor spills or leaks occurred during storage; however, it is unknown if any PCB oils have been spilled at the site. It is estimated that less than 50 gallons of transformer oils leaked at the site.

The soils in the vicinity of the site are sucsceptible to contaminant migration. Contaminants in the area would migrate either by surface mode or through the water table aquifer to the north toward the St. Johns River. Potential receptors would be aquatic life in the St. Johns River. The quantities of potential contaminants and hazards (unknown if PCB is present) are considered small, and a Confirmation Study under the NACIP Program is not recommended.

# CHAPTER 3. RECOMMENDATIONS

3.1 INTRODUCTION. This chapter presents the recommended action for the 16 potentially contaminated sites on Naval Station (NAVSTA) Mayport. Nine of the 16 sites pose a potential threat to human health or the environment. Eight sites are recommended for Confirmation Studies; the ninth site is currently scheduled for closure in accordance with Resource Conservation and Recovery Act (RCRA) regulations.

A two-step Confirmation Study Ranking System (CSRS) (NEESA 20.2-42 of 29 November 1982) is used to systematically evaluate the relative severity of potential problems at each site. The results of the CSRS and the recommended actions at each site are presented in Table 3-1. All sites should be marked on the installation development maps; reported to Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Real Estate Department; and reported to the NAVSTA Mayport Public Works Branch so that proper precautions can be taken during new construction at the sites.

The Confirmation Study Program recommended by the Initial Assessment Study (IAS) is for a period of one year. Recommendations for additional studies may be made after an evaluation of the results of the initial monitoring program.

3.2 CONFIRMATION STUDY RECOMMENDATIONS.

3.2.1 Site 1: Landfill A. The recommended ground water and soil sampling program is designed to detect the presence or migration of contaminants from the former Landfill A area. The locations proposed for monitor wells and soil samples are presented in Figure 3-1. The actual locations for monitor wells and soil samples should be selected after an initial visit survey to determine site accessibility. The proposed well locations include one upgradient and two downgradient wells. The flow of ground water in the shallow aquifer at Site 1 is toward the northeast and the St. Johns River.

| | |
|---|---|
| Type of Sampling: | Ground water and soils |
| Frequency of Sampling: | Quarterly for one year for ground water, once for soils |
| Number of Samples: | 12 ground water, three soils |
| Testing Parameters: | Ground Water: Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics, pesticides, PCB, and base/neutral extractables and acid extractables |
| | Soils: PCB and EPA EP toxicity test for metals and pesticides |

Table 3-1

Summary of Confirmation Study Site Recommendations, Naval Station Mayport, Florida

| Site Number | Site Name | CSRS Score | Number of Wells | Number and Type of Samples | Frequency of Sampling | Parameters to be Analyzed |
|---|---|---|---|---|---|---|
| 104-1 | Landfill A | 15 | 3 | 12 Ground water | Quarterly for one year | Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics (EPA Methods 601 and 602), pesticides and PCB (EPA Method 608), and EPA Method 625 for base/neutral extractables and acid extractables. |
| | | | | 3 Soil cores | Once | EPA Extraction Procedure (EP) toxicity test for metals and pesticides, and PCB (EPA Method 8080). |
| 104-2 | Landfill B | 12 | 3 | 16 Ground water* | Quarterly for one year | Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics (EPA Methods 601 and 602), pesticides and PCB (EPA Method 608), and EPA Method 625 for base/neutral extractables and acid extractables. |

Table 3-1

Summary of Confirmation Study Site Recommendations, Naval Station Mayport, Florida (contd.)

| Site Number | Site Name | CSRS Score | Number of Wells | Number and Type of Samples | Frequency of Sampling | Parameters to be Analyzed |
|---|---|---|---|---|---|---|
| 104-2 (contd.) | | | | 3 Soil cores | Once | EPA EP toxicity test for metals and pesticides, and PCB (EPA Method 8080). |
| 104-4 | Landfill D | 8 | 2* | 8 Ground water | Quarterly for one year | Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics (EPA Methods 601 and 602), pesticides and PCB (EPA Method 608), and EPA Method 625 for base/neutral extractables and acid extractables. |
| | | | | 2 Soil cores | Once | EPA EP toxicity test for metals and pesticides, and PCB (EPA Method 8080). |
| 104-5 | Landfill E | 10 | 4†,** | 20†† Ground water | Quarterly for one year | Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics (EPA Methods 601 and 602), pesticides and PCB (EPA |

Table 3-1

Summary of Confirmation Study Site Recommendations, Naval Station Mayport, Florida (contd.)

| Site Number | Site Name | CSRS Score | Number of Wells | Number and Type of Samples | Frequency of Sampling | Parameters to be Analyzed |
|---|---|---|---|---|---|---|
| 104-5 (contd.) | | | | | | Method 608), and EPA Method 625 for base/neutral extractables and acid extractables. |
| | | | | 4 Soil cores | Once | EPA EP toxicity test for metals and pesticides, and PCB (EPA Method 8080). |
| 104-6 | Landfill F | 10 | 4** | 24†† Ground water | Quarterly for one year | Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics (EPA Methods 601 and 602), pesticides and PCB (EPA Method 608), and EPA Method 625 for base/neutral extractables and acid extractables. |
| | | | | 4 Soil cores | Once | EPA EP toxicity test for metals and pesticides, and PCB (EPA Method 8080). |

Table 3-1

Summary of Confirmation Study Site Recommendations, Naval Station Mayport, Florida (contd.)

| Site Number | Site Name | CSRS Score | Number of Wells | Number and Type of Samples | Frequency of Sampling | Parameters to be Analyzed |
|---|---|---|---|---|---|---|
| 104-8 | Waste Oil Pit | 26 | 2 | 8 Ground water | Quarterly for one year | Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics (EPA Methods 601 and 602), pesticides and PCB (EPA Method 608), and EPA Method 625 for base/neutral extractables and acid extractables. |
| | | | | 2 Soil cores | Once | EPA EP toxicity test for metals and pesticides, and PCB (EPA Method 8080). |
| 104-9 | Fuel Spill Area | 22 | 2 | 8 Ground water | Quarterly for one year | Water level; pH; specific conductance; fuel thickness; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics (EPA Methods 601 and 602), pesticides and PCB (EPA Method 608), and EPA Method 625 for base/neutral extractables and acid extractables. |

Table 3-1

Summary of Confirmation Study Site Recommendations, Naval Station Mayport, Florida (contd.)

| Site Number | Site Name | CSRS Score | Number of Wells | Number and Type of Samples | Frequency of Sampling | Parameters to be Analyzed |
|---|---|---|---|---|---|---|
| 104-14 | Mercury/Oil Waste Spill Site | 21 | None | 6 Soil | Once | EPA EP toxicity test for metals and pesticides, PCB (EPA Method 8080), and purgeable organics (EPA Methods 8010 and 8020). |

*Includes background well for sites 104-2, 104-4, 104-5, and 104-6.
†Includes one well which will be located between Site 4 and Site 5.
**Does not include two wells located at the site.
††Includes samples from two existing wells at the site.

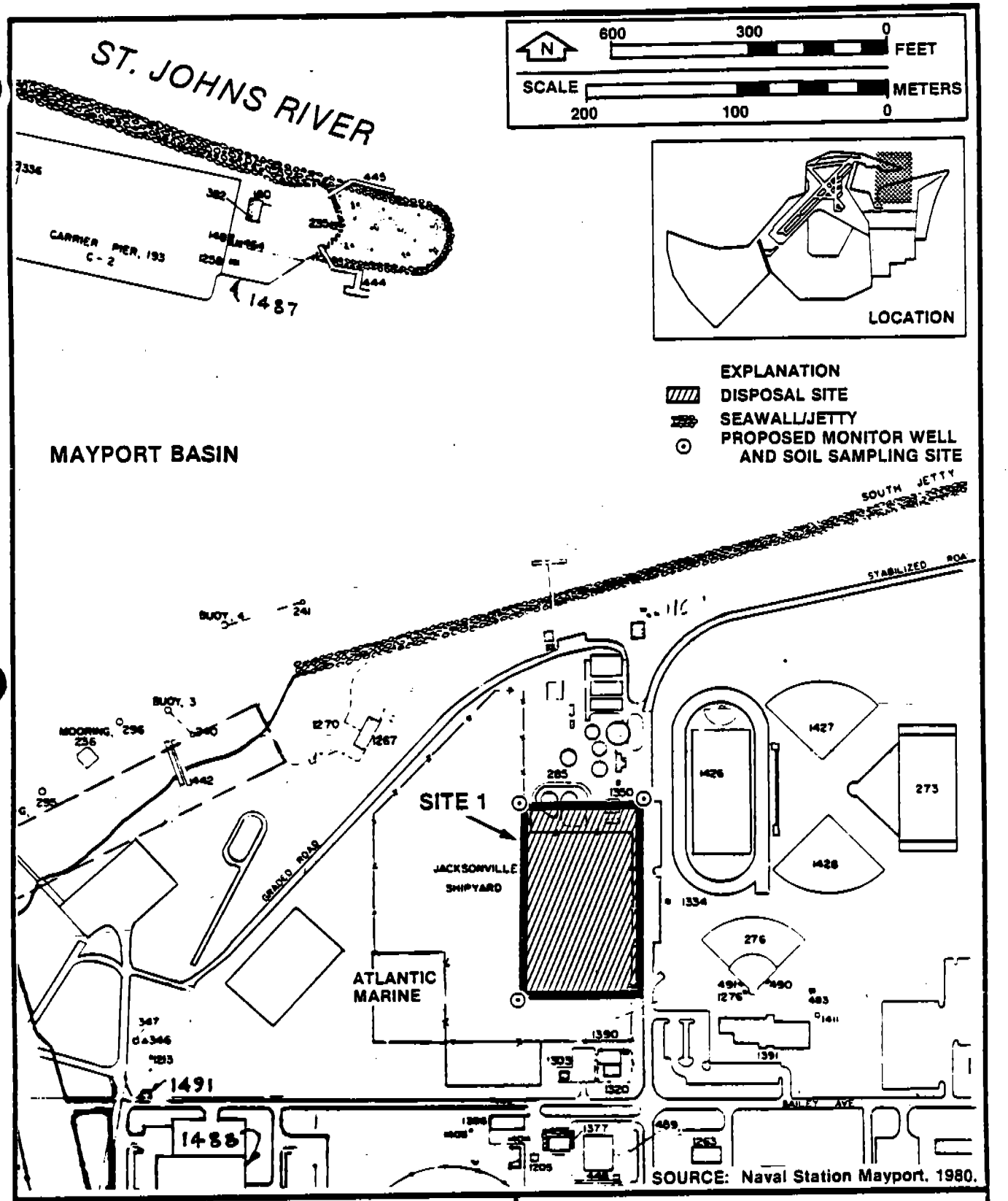


**Figure 3-1**
**APPROXIMATE LOCATIONS OF PROPOSED MONITOR WELLS AT SITE 1**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

Remarks: Geophysical methods may be required to accurately outline the landfill area. Wells should be installed outside the landfill area. Piezometer wells may be required to determine actual ground water flow direction and variation in depth to water surface. The wells should be screened in the surficial aquifer to extend at least one foot above the maximum high water table for the area. The wells should be screened to a sufficient depth to intercept any contaminants that may be migrating from the area (possibly 40 to 60 feet to confining layer). The wells should be sampled to obtain any potential contaminants that would tend to float on the surface.

The soil samples should be obtained by compositing split spoon samples collected during the well drilling. Soil samples will not be required throughout the entire soil column penetrated by the wells.

3.2.2 Site 2: Landfill B. A ground water and soil sampling program is proposed for Site 2. The program is designed to detect the migration of pollutants in the shallow ground water or contained in the soils. The locations proposed as sites where wells should be installed and soil samples collected are presented in Figure 3-2. The proposed well locations at Site 2 may all be downgradient; the shallow ground water flow direction is expected to be influenced by the dredge spoil disposal area. A proposed background well location for sites 2, 4, 5, and 6 is also shown in Figure 3-2.

| | |
|---|---|
| Type of Sampling: | Ground water and soils |
| Frequency of Sampling: | Quarterly for one year for ground water, once for soils |
| Number of Samples: | 16 ground water, three soils |
| Testing Parameters: | Ground Water: Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics, pesticides, PCB, base/neutral extractables, and acid extractables |
| | Soils: PCB and EPA EP toxicity test for metals and pesticides |

Remarks: Geophysical methods may be required to accurately outline the landfill area. Wells should be installed outside the landfill area. Piezometer wells may be required to determine actual ground water flow direction and variation in depth to water surface. The wells should be screened in the surficial aquifer to extend at least one foot above the maximum high water table for the area. The wells should be screened to a sufficient depth to intercept any contaminants that may be migrating from

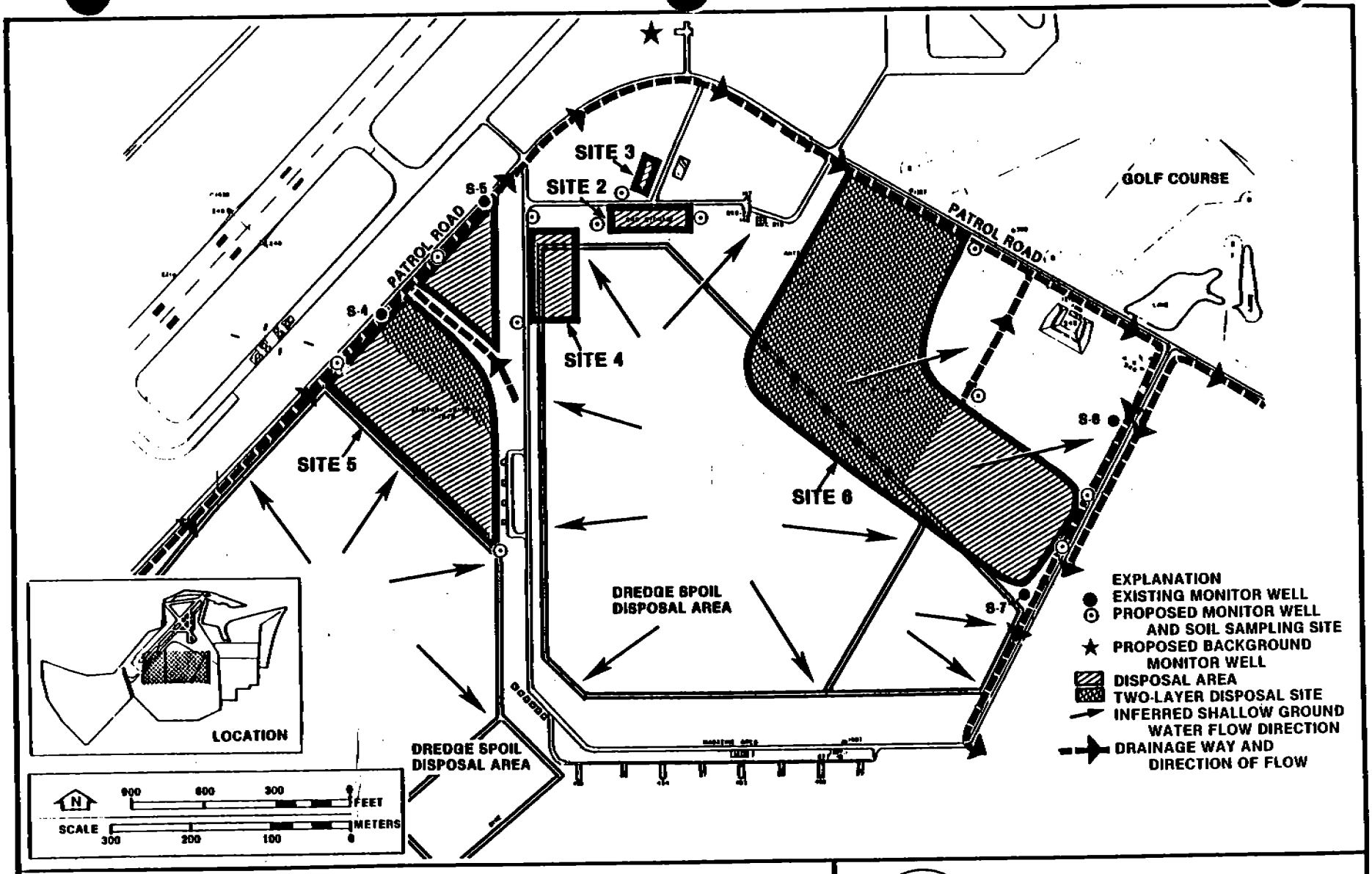


**Figure 3-2**
**APPROXIMATE LOCATIONS OF PROPOSED MONITOR WELLS AT SITE 2, SITE 4, SITE 5, AND SITE 6**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

the area (possibly 40 to 60 feet to confining layer). The wells should be sampled to obtain any potential contaminants that would tend to float on the surface.

The soil samples should be obtained by compositing split spoon samples collected during the well drilling. Soil samples will not be required throughout the entire soil column penetrated by the wells.

3.2.3 Site 4: Landfill D. The ground water and soil sampling program recommended for Site 4 is designed to detect the presence and migration of contaminants from the former landfill area. The locations of the proposed monitor wells and soil sampling sites are presented in Figure 3-2. The proposed well locations for Site 4 are downgradient of the anticipated ground water flow direction in the shallow aquifer. The shallow aquifer flow direction is expected to be highly influenced by the mounded water in the dredge spoil disposal area.

| | |
|---|---|
| Type of Sampling: | Ground water and soils |
| Frequency of Sampling: | Quarterly for one year for ground water, once for soils |
| Number of Samples: | Eight ground water, two soils |
| Testing Parameters: | Ground Water: Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics, pesticides, PCB, base/neutral extractables, and acid extractables |
| | Soils: PCB and EPA EP toxicity test for metals and pesticides |

Remarks: Geophysical methods may be required to accurately outline the landfill area. Wells should be installed outside the landfill area. Piezometer wells may be required to determine actual ground water flow direction and variation in depth to water surface. The wells should be screened in the surficial aquifer to extend at least one foot above the maximum high water table for the area. The wells should be screened to a sufficient depth to intercept any contaminants that may be migrating from the area (possibly 40 to 60 feet to confining layer). The wells should be sampled to obtain any potential contaminants that would tend to float on the surface.

The soil samples should be obtained by compositing split spoon samples collected during the well drilling. Soil samples will not be required throughout the entire soil column penetrated by the wells.

3.2.4 Site 5: Landfill E. The sampling program recommended for Site 5 is designed to detect the migration of contaminants in the shallow ground water toward a stormwater drainage ditch that discharges outside the station boundary. It is also designed to detect the presence of contaminants in the soil column that may migrate in the future. The locations of proposed monitor wells and soil sampling sites are presented in Figure 3-2. In addition to the four proposed monitor wells (Note: one well is between Landfill D and Landfill E), the two monitor wells installed at the site as part of a past ground water assessment study should be sampled and analyzed for contaminants. The flow direction of the shallow ground water at this site is influenced by the mounded water contained in the dredge spoil disposal areas.

Type of Sampling: Ground water and soils

Frequency of Sampling: Quarterly for one year for ground water, once for soils

Number of Samples: 20 ground water, four soils

Testing Parameters: Ground Water: Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics, pesticides, PCB, base/neutral extractables, and acid extractables

Soils: PCB and EPA EP toxicity test for metals and pesticides

Remarks: Geophysical methods may be required to accurately outline the landfill area. Wells should be installed outside the landfill area. Piezometer wells may be required to determine actual ground water flow direction and variation in depth to water surface. The wells should be screened in the surficial aquifer to extend at least one foot above the maximum high water table for the area. The wells should be screened to a sufficient depth to intercept any contaminants that may be migrating from the area (possibly 40 to 60 feet to confining layer). The wells should be sampled to obtain any potential contaminants that would tend to float on the surface.

The soil samples should be obtained by compositing split spoon samples collected during the well drilling. Soil samples will not be required throughout the entire soil column penetrated by the wells.

3.2.5 Site 6: Landfill F. The ground water and soil sampling program recommended for Site 6 is designed to detect the presence and migration of contaminants toward an area where the vegetation is showing distress and toward a stormwater drainage ditch that discharges off the station. The locations of proposed monitor wells and soil sampling locations are

presented in Figure 3-2. In addition to the four proposed monitor wells, the two monitor wells installed at the site as part of a past ground water assessment study should also be sampled and analyzed for contaminants. The flow direction of the shallow ground water at Landfill F is influenced by the dredge spoil disposal area.

Type of Sampling: Ground water and soils

Frequency of Sampling: Quarterly for one year for ground water, once for soils

Number of Samples: 24 ground water, four soils

Testing Parameters: Ground Water: Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics, pesticides, PCB, base/neutral extractables, and acid extractables

Soils: PCB and EPA EP toxicity test for metals and pesticides

Remarks: Geophysical methods may be required to accurately outline the landfill area. Wells should be installed outside the landfill area. Piezometer wells may be required to determine actual ground water flow direction and variation in depth to water surface. The wells should be screened in the surficial aquifer to extend at least one foot above the maximum high water table for the area. The wells should be screened to a sufficient depth to intercept any contaminants that may be migrating from the area (possibly 40 to 60 feet to confining layer). The wells should be sampled to obtain any potential contaminants that would tend to float on the surface.

The soil samples should be obtained by compositing split spoon samples collected during the well drilling. Soil samples will not be required throughout the entire soil column penetrated by the wells.

3.2.6 Site 8: Waste Oil Pit. The ground water and soil monitoring program at Site 8 is designed to detect the migration of contaminants toward the St. Johns River. The proposed locations for the monitor wells, presented in Figure 3-3, are downgradient of the site. The flow of shallow ground water at the site is expected to be to the north-northeast.

Type of Sampling: Ground water and soils

Frequency of Sampling: Quarterly for one year for ground water, once for soils

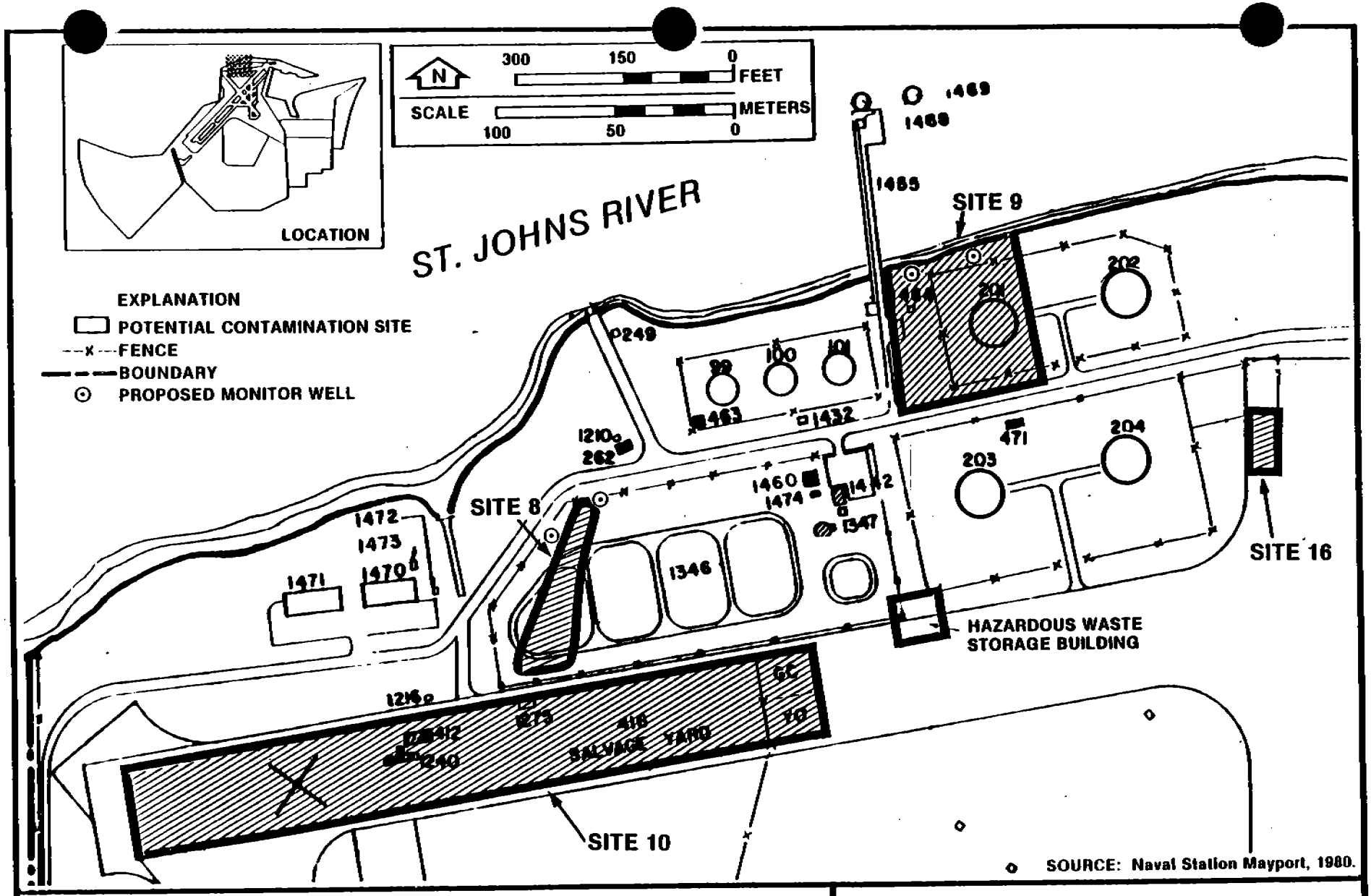


**Figure 3-3**
**APPROXIMATE LOCATIONS OF PROPOSED MONITOR WELLS AND SOIL SAMPLING AREAS AT SITE 8 AND SITE 9**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

Number of Samples: Eight ground water, two soils

Testing Parameters: Ground Water: Water level; pH; specific conductance; oil and grease; and priority pollutants to include: metals, phenols, purgeable organics, pesticides, PCB, base/neutral extractables, and acid extractables

Soils: PCB and EPA EP toxicity test for metals and pesticides

Remarks: Piezometer wells may be required to determine the actual ground water flow direction and variation in depths to water table in the area. The wells should be screened throughout a sufficient depth of the water table aquifer to intercept any migrating contaminants (possibly 40 to 60 feet to confining layer). The screened portion should extend at least one foot above the maximum high water table for the area. The wells should be sampled in a manner to collect any contaminants floating on the water column.

The soil samples should be obtained as composite split spoon samples collected during the well installatin process. Soil samples will not be required throughout the entire soil column penetrated by the wells.

3.2.7 Site 9: Fuel Spill Area. The ground water sampling program proposed for Site 9 is designed to detect any contaminants migrating toward the St. Johns River. The proposed locations for the monitor wells is presented in Figure 3-3.

Type of Sampling: Ground water

Frequency of Sampling: Quarterly for one year

Number of Samples: Eight

Testing Parameters: Water level; pH; specific conductance; fuel thickness; oil and grease; and priority pollutants to include: ~~metals~~, phenols, purgeable organics, pesticides, PCB, base/neutral extractables, and acid extractables

Remarks: The wells should be screened throughout a sufficient depth of the water table aquifer to intercept any migrating contaminants. The screened portion should exend at least one foot above the maximum high water table for the area.

3.2.8 Site 14: Mercury/Oily Waste Spill Site. The sampling program proposed for Site 14 is designed to detect the presence of contaminants in the soils. Contaminants, if present, could migrate to the St. Johns River by either ground water or surface water. The proposed soil

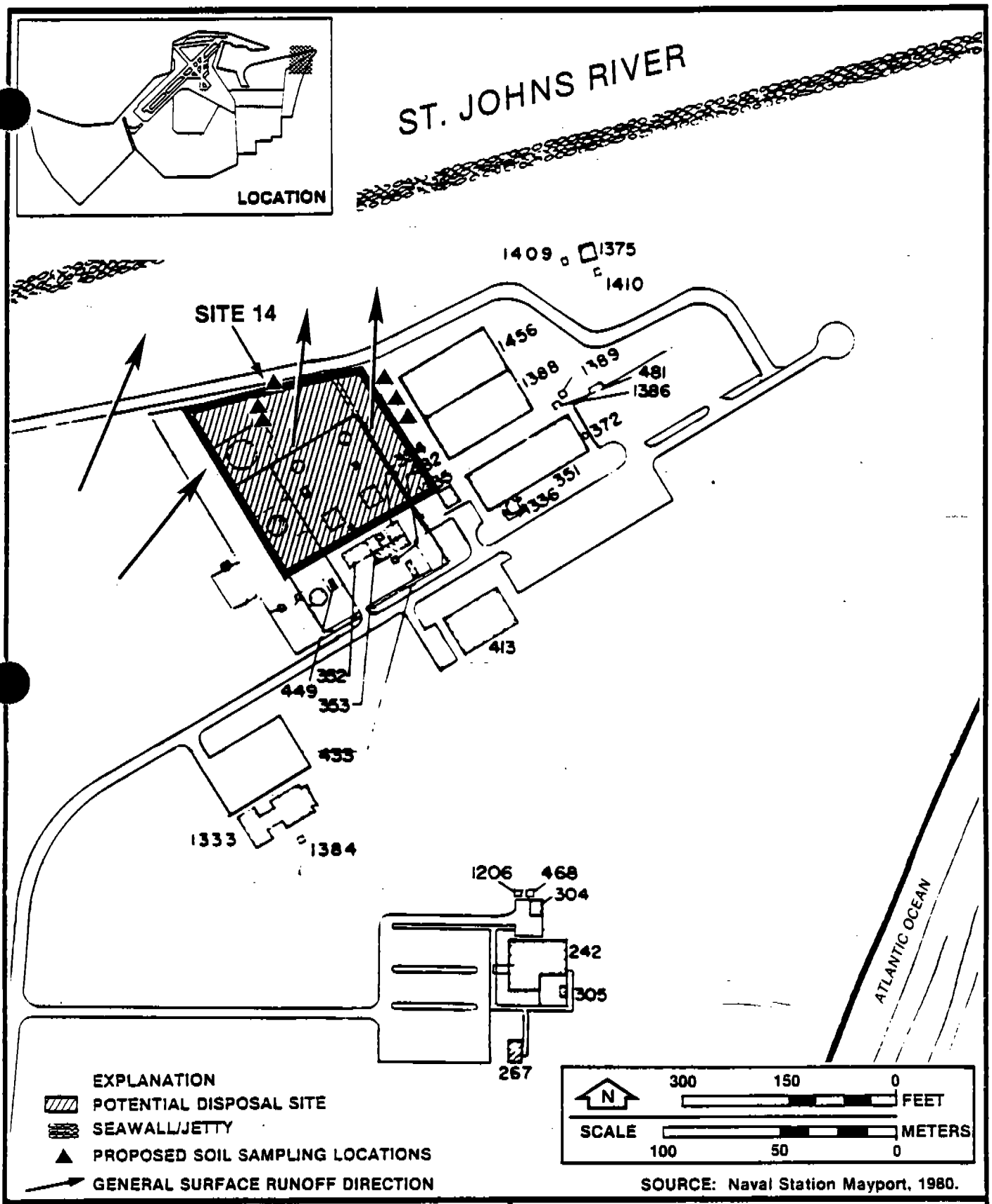


Figure 3-4
PROPOSED SOIL SAMPLING LOCATIONS
AT SITE 14

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sampling locations are presented in Figure 3-4. The surface water flow direction and the shallow ground water flow direction is toward the St. Johns River.

Type of Sampling: Soils

Frequency of Sampling: Once

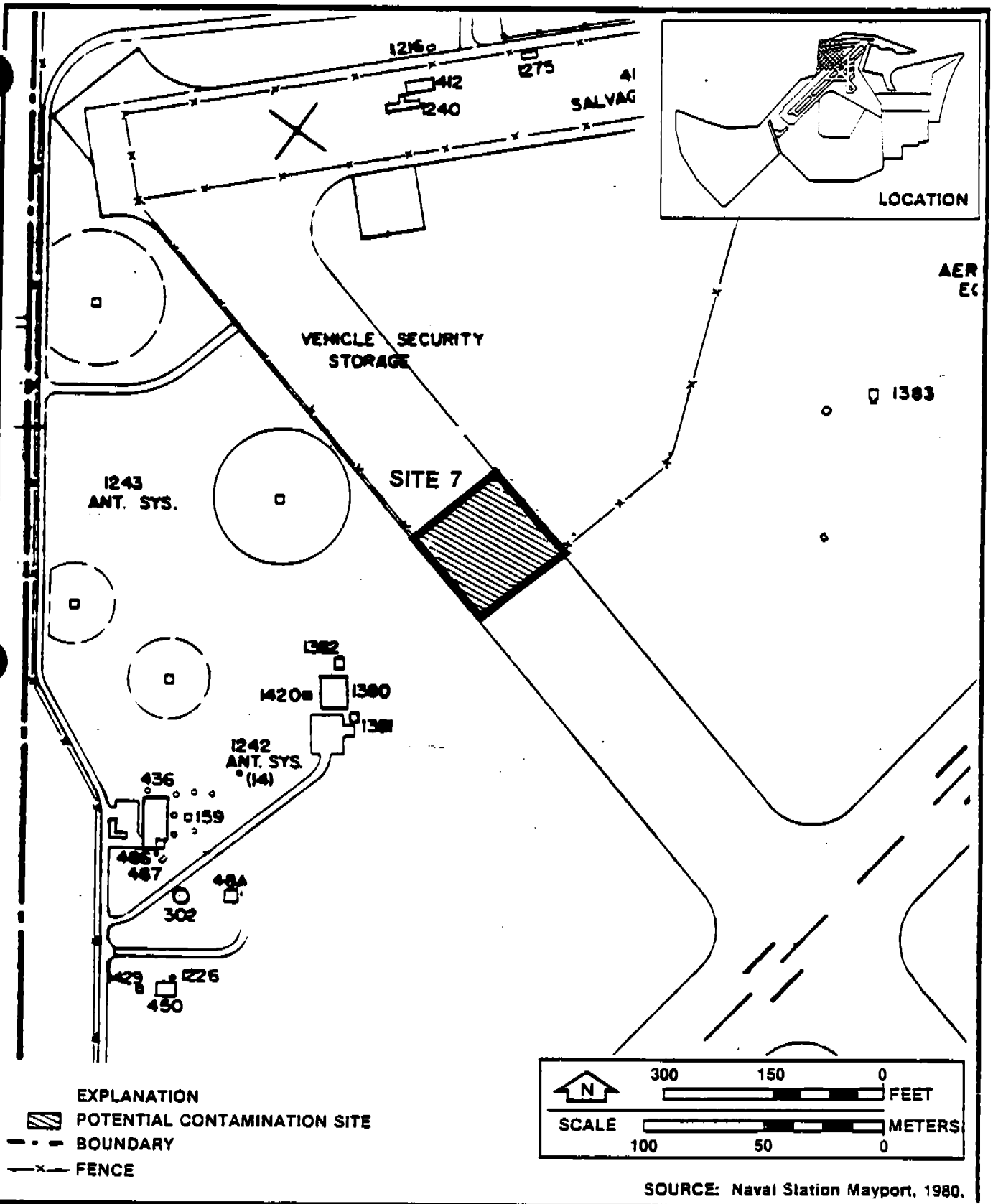
Number of Samples: Six

Testing Parameters: PCB, purgeable organics, and EPA EP toxicity test for metals and pesticides

Remarks: Soil samples should be collected in areas where spills have discolored the soils. The soil samples should be collected and composited from cores of up to one foot in depth. A one-foot-depth composite core should be sufficient to determine if hazardous contaminants are present.

3.3 NONCONFIRMATION STUDY RECOMMENDATIONS.

3.3.1 Site 7: Hazardous Waste Storage Area. Site 7 is located near Building 1380 on an abandoned asphalt runway (see Figure 3-5). Site 7 was used as a storage area for hazardous wastes between 1981 and 1985 and as a fire training area between 1959 and 1972. The site contains potential contaminants from these activities. The site is currently undergoing closure in compliance with RCRA regulations. It is recommended that NAVSTA Mayport proceed with the closure plan for this site.




SOURCE: Naval Station Mayport, 1980.

Figure 3-5
LOCATION OF SITE 7

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# CHAPTER 4. BACKGROUND INFORMATION

4.1 INTRODUCTION. This chapter presents general background information on Naval Station (NAVSTA) Mayport. NAVSTA Mayport lies on the southern bank of the St. Johns River at its entrance to the Atlantic Ocean (see Figure 4-1). The station is approximately 15 miles east of the Jacksonville central business district and five miles north of the communities of Atlantic Beach, Neptune Beach, and Jacksonville Beach. NAVSTA Mayport occupies 3,286 acres of land of which approximately 1,667 acres is salt marsh and tidal waters.

The basic mission of NAVSTA Mayport is to provide, as appropriate, logistics support for the operating forces of the Navy and for dependent activities and other commands, as assigned.

Mayport functions under the authority of the Commanding Officer. The internal organization of NAVSTA Mayport is shown in Figure 4-2.

4.1.1 Tenants. Tenants and other activities/units/detachments located at NAVSTA Mayport include the following:

1. Atlantic Fleet Audio-Visual Center Detachment,
2. Commander Carrier Group 6,
3. Commander Cruiser/Destroyer Group 12,
4. Commander Destroyer Squadron 8,
5. Commander Destroyer Squadron 12,
6. Commander Destroyer Squadron 14,
7. Commander Destroyer Squadron 24,
8. Explosive Ordnance Disposal Detachment,
9. Fleet Training Center,
10. Mobile Technical Unit 12,
11. Naval Air Engineering Center (Carrier and Field Service Unit),
12. Naval Air Maintenance Training Group Detachment 4030,
13. Naval Air Station Jacksonville Telecommunication Detachment,
14. Naval Investigative Service,
15. Naval Sea Support Center Atlantic,
16. Naval Surface Force Atlantic Readiness Support Group,
17. Navy Campus Education Center,
18. Navy Exchange,
19. Navy Food Management Team,
20. Navy Legal Services Office,
21. Officer in Charge of Construction/Resident Officer in Charge of Construction,
22. Organization Effectiveness Center,
23. Personnel Support Detachment,
24. Shore Intermediate Maintenance Activity, and
25. Surface Force Chaplin's Center.

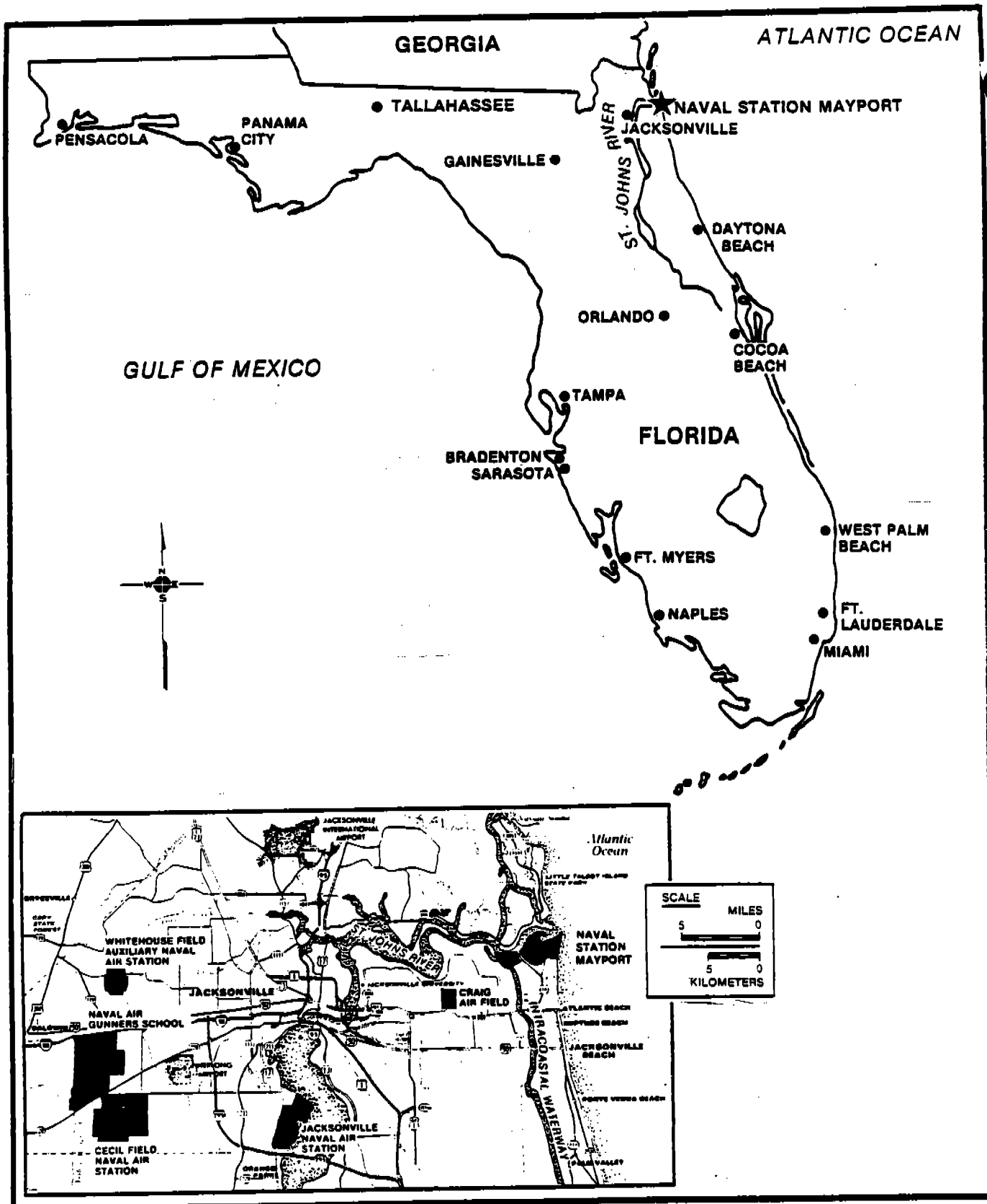


**Figure 4-1**
**LOCATION OF NAVAL STATION MAYPORT**

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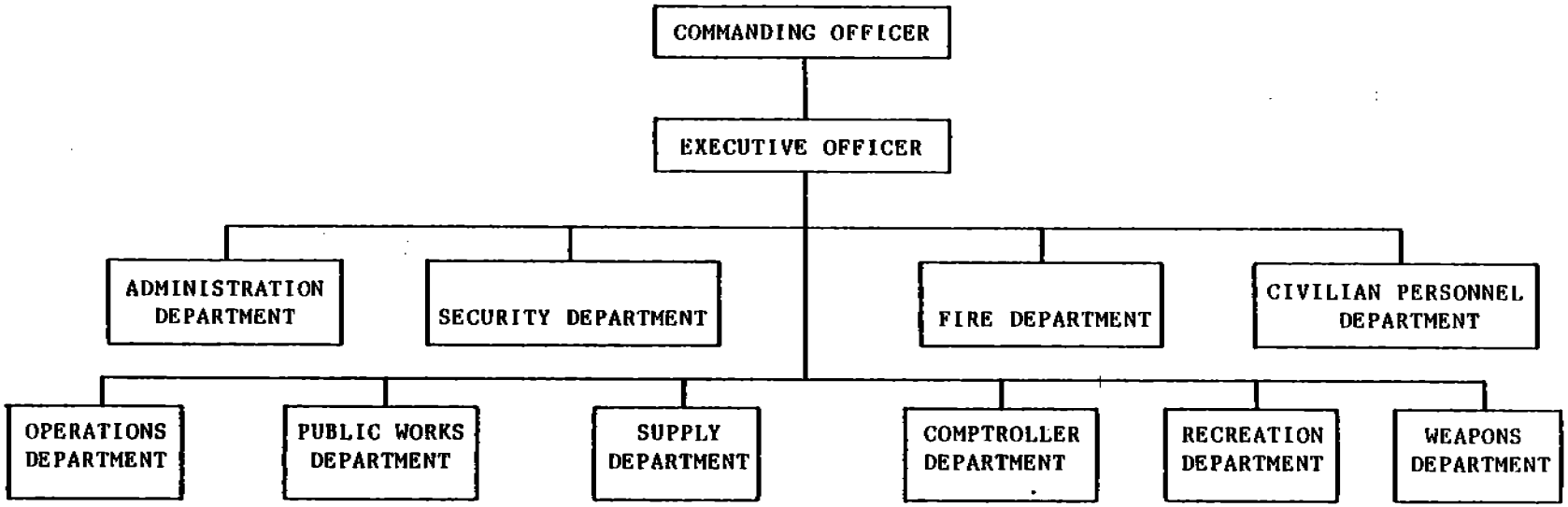


SOURCE: Navy, n.d.(b).

**Figure 4-2**
**NAVAL STATION MAYPORT ORGANIZATION**

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**NAVAL STATION**
**MAYPORT, FLORIDA**

Non-Department of Defense activities supported by NAVSTA Mayport include the following:

1. American National Bank of Jacksonville,
2. American Red Cross,
3. Navy Federal Credit Unit,
4. Navy Relief Society,
5. Navy Wives Clubs of America,
6. Scheduled Airlines Ticket Office,
7. U.S. Coast Guard, and
8. U.S. Post Office.

Private contractors occupying property at NAVSTA Mayport include the following:

1. Atlantic Marine,
2. Jacksonville Shipyard, Inc., and
3. North Florida Shipyards, Inc.

4.1.2 Leases and Agreements. Leaseholders at NAVSTA Mayport include the following:

1. City of Atlantic Beach, Florida;
2. Buccaneer Service Co., Inc.;
3. City of Jacksonville, Florida;
4. Jacksonville Electric Authority;
5. Southern Bell Telephone and Telegraph Company;
6. American National Bank;
7. Navy Federal Credit Union;
8. First Naval Station Mayport Quarters, Inc.;
9. Second Naval Station Mayport Quarters, Inc.;
10. Third Naval Station Mayport Quarters, Inc.;
11. U.S. Army Corps of Engineers;
12. Grumman Aerospace Corporation;
13. TRACOR, Inc.;
14. Atlantic National Bank;
15. Imeson Distribution Center;
16. Department of Transportation/U.S. Coast Guard;
17. Florida Department of Transportation;
18. Jacksonville Shipyards, Inc.;
19. Atlantic Marine, Inc.; and
20. North Florida Shipyards, Inc.

Use and disposal of hazardous wastes from Jacksonville Shipyards, Inc.; Atlantic Marine, Inc.; and North Florida Shipyards, Inc. are discussed in Sections 5.2.4.3, 5.2.4.4, and 5.2.4.5, respectively. The other leaseholders do not generate hazardous wastes.

4.1.2 Adjacent Land Use. NAVSTA Mayport is bounded on the north by the St. Johns River. The town of Mayport is located between the eastern and western sections of NAVSTA Mayport, on the bank of the St. Johns River

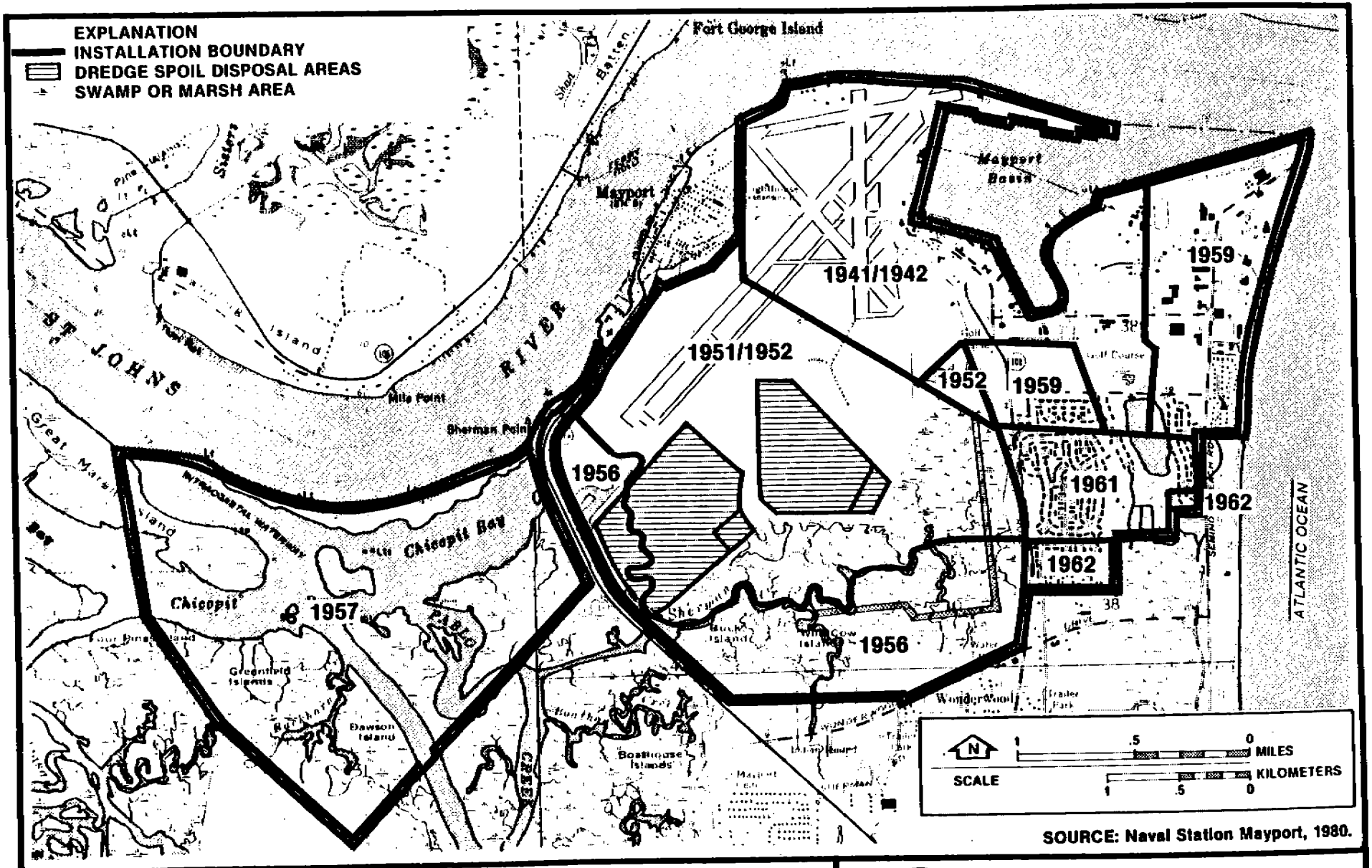
(see Figure 4-3). The primary land use in the town of Mayport is residential housing and small businesses including restaurants, gas stations, and others. No major pollutant-producing sources that would affect NAVSTA Mayport are located in the town of Mayport.

The west end of NAVSTA Mayport is bounded by salt marsh. The Intracoastal Waterway is also located in this area. No residential housing or industrial activities are located toward the west end of NAVSTA Mayport. The most significant operation that may produce contaminants is commercial boating along the Intracoastal Waterway.

The areas south of NAVSTA Mayport are used for residential housing. No industrial activities are conducted in these areas.

4.2 HISTORICAL INFORMATION. The importance of Mayport as a port for ocean-going ships was first recognized by the French in 1562, when Commodore Jean Ribault and a small squadron of ships anchored near the mouth of the St. Johns River and set ashore to obtain supplies from an Indian village sighted in the vicinity. A later French expedition established Fort Caroline west of the present NAVSTA Mayport. The area has also been the home port for Spanish and British sailors.

NAVSTA Mayport was originally recommended in 1938 by the Hepburn Board as a carrier berthing base for the main air base at Jacksonville. On 18 July 1939, the citizens of Duval County passed a bond issue to purchase land for the installation; however, nothing was done at Mayport until World War II, when the Navy recognized the need for a second major base in the southern U.S. NAVSTA Mayport, occupying less than 700 acres (see Figure 4-3 for land acquisition sequence), was commissioned in December 1942. The Mayport basin was constructed by dredging the former Ribault Bay to a depth of 29 feet. The station was used by patrol craft and target and rescue boats. In 1943, a landing field, dispensary, and other structures were constructed. In 1944, Mayport was commissioned as a Naval Auxiliary Air Station (NAAS). The NAAS was decommissioned in 1946, and the installation was converted into a Coast Guard base. In July 1948, the station was recommissioned as a Naval Auxiliary Landing Field under the command of Naval Air Station Jacksonville. With the purchase of additional land in 1951, NAVSTA Mayport more than doubled in size. The Mayport basin (former Ribault Bay) was expanded to six million square feet and dredged to 40 feet to accommodate larger ships, including the aircraft carrier USS Lake Chaplain. With the expansion in facilities, the station was redesignated as Naval Station Mayport. The station continued to grow throughout the 1950s, 1960s, and 1970s, both in size and in number and types of ships stationed there. In 1982, Naval Air Facility Mayport was commissioned, initiating new construction to house the LAMPS Mark III helicopter squadrons and support activities. Today, NAVSTA Mayport occupies approximately 3,286 acres and is the home port of 34 ships, including 16 guided missile frigates, seven frigates, four guided missile destroyers, two aircraft carriers, three mine




SOURCE: Naval Station Mayport, 1980.

**Figure 4-3**
**ADJACENT LAND USE AND LAND ACQUISITION SEQUENCE FOR NAVAL STATION MAYPORT**

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sweepers, one cruiser, and one destroyer tender. NAVSTA Mayport is expected to continue to expand, both in number of ships and stationed personnel.

4.3 LEGAL ACTIONS. No environmentally related legal actions are known to have been taken against NAVSTA Mayport.

4.4 BIOLOGICAL FEATURES.

4.4.1 Ecosystems. Natural resources on NAVSTA Mayport are influenced to a high degree by wetlands and water bodies within and adjacent to its boundaries. The Atlantic Ocean forms the station's eastern boundary, while the St. Johns River bounds the station on the north and northwest (with the exception of the area adjacent to the city of Mayport). Most of the station located west of Route A1A and the area south of the magazines (adjacent to Sherman Creek) is comprised of coastal marsh and tidal creeks including a portion of the Intracostal Waterway. Locations of the various Ecosystems on NAVSTA Mayport are presented in Figure 4-4.

The installation encompasses 3,286 acres, of which approximately half is brackish marsh, sand spits, beach (vegetated and nonvegetated), and dredge spoil areas (1,667 acres). Other land-use types on NAVSTA Mayport include regularly mowed lawns, roadside, and golf course (527 acres); irregularly mowed road and runway shoulders (420 acres); buildings and pavement (387 acres); and managed forest (285 acres) (Navy, 1984b).

4.4.1.1 Coastal Marshes. Wetlands such as coastal marshes (see Figure 4-4) have been determined to be extremely valuable as nursery grounds and habitat for aquatic wildlife species. A marsh's value is also realized as it provides resources for other wildlife throughout the food chain, as well as effectively managing the movement of large volumes of water. To protect wetland communities from adverse impacts, activities involving wetlands have become regulated by State and Federal agencies. Chapter 17.4 of the Florida Administrative Code dictates laws by which Florida Department of Environmental Regulation establishes jurisdiction and subsequent regulation of wetlands. Concurrently, the Code of Federal Regulations [(CFR) sections 323.2 and 330.4] defines similar regulations by which the U.S. Army Corps of Engineers exerts authority over wetland activities.

Although research conducted to evaluate natural resources on NAVSTA Mayport has been lacking, a study was conducted in 1972 (winter) to characterize the wetlands associated with Sherman Creek. The study assessed populations that could be impacted by disposal of spoil material dredged from Mayport basin (NAVSTA Mayport, 1972). The predominant marsh vegetation is glasswort (Salicornia virginica) and (S. bigelovii), with cordgrass (Spartina angustifolia) and needlerush (Juncus roemerianus) codominant along edges of tidal creeks. Transition areas and spoil banks support false willow (Baccharis angustifolia), wax myrtle (Myrica cerifera), and bluestem grass (Andropogon sp.). Wildlife species most

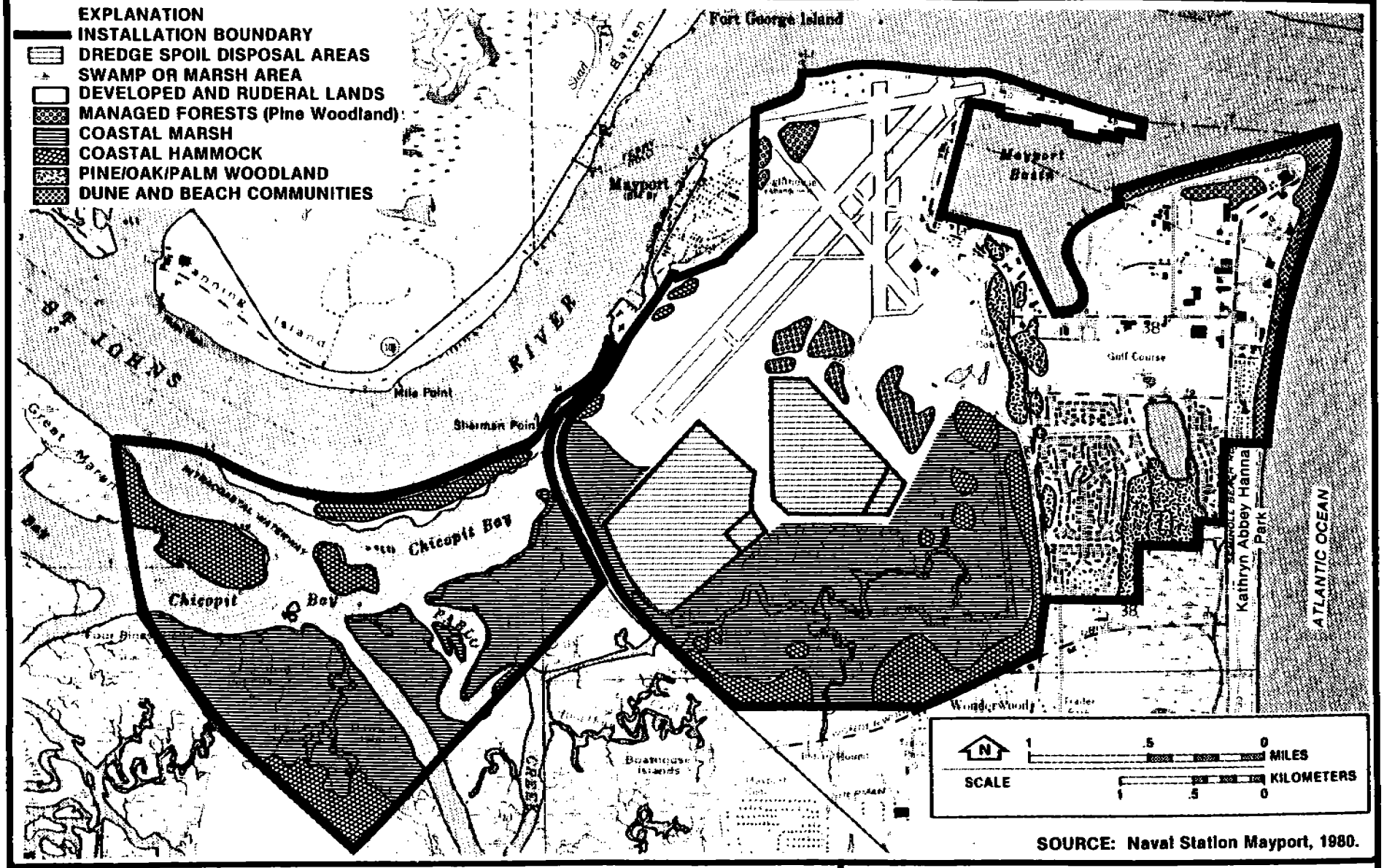


**Figure 4-4**
**LOCATIONS OF ECOSYSTEMS ON NAVAL STATION MAYPORT**

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commonly identified during the study included marsh rabbit (Sylvilagus palustris), raccoon (Procyon lotor), laughing gull (Larus atricilla), ring-billed gull (L. delawarensis), herring gull (L. argentatus), boat-tailed grackle (Quiscalus major), red-winged blackbird (Agelaius phoeniceus), tree swallow (Tachycineta bicolor), and killdeer (Charadrius vociferus). Also observed, but in fewer numbers, were several species of shore and wading birds, fish, and unidentified marine invertebrates.

The primary alteration to wetlands on NAVSTA Mayport has historically been spoil disposal, although presently an active investigation of alternate spoil deposition methods is in progress. Additional management of coastal marshes on NAVSTA Mayport has included ditching to increase tidal flushing, which aids in control of mosquitoes.

4.4.1.2 Dune and Beach Communities (see Figure 4-4 for locations). Well-developed dune systems are generally lacking on the station's Atlantic coast. This is evident when compared to the adjoining coast south of the station boundary where several dune ridges are established by numerous live oaks (Quercus virginiana) and several other coastal hammock species. Dunes with the highest degree of establishment on NAVSTA Mayport occur around St. Johns Point. Stabilization of the dunes in this area is aided by early successional vegetation including railroad vine (Ipomea pescaprae), ragweed (Eupatorium sp.), sea oats (Uniola paniculata), groundsel-tree (Baccharis glomeruliflora), wax myrtle, greenbriar (Smilax sp.), and native grasses.

South of St. Johns Point lies Seminole Beach (see Figure 4-4), which is used for recreation by station personnel and their families. The most abundant wildlife observed in this habitat are shorebirds and gulls. Common species include semipalmated plover (Charadrius semipalmatus), killdeer, ruddy turnstone (Arenaria interpres), herring gull, ring-billed gull, laughing gull, royal tern (Sterna maxima), and Caspian tern (S. caspia).

4.4.1.3 Developed and Ruderal Lands. Developed and ruderal areas (see Figure 4-4) account for approximately 40 percent of NAVSTA Mayport lands (Navy, 1984b). Developed areas include buildings, roads and runways, parking lots, and training areas. Ruderal lands are areas in which natural vegetation has been removed or altered. These areas include edges of roads and runways, fields, a golf course, and areas maintained around buildings. Vegetation in ruderal areas include introduced and native grasses, shrubs, and trees used for erosion control and landscaping purposes. The most common native trees on NAVSTA Mayport are live oak, cabbage palm (Sabal palmetto), and slash pine (Pinus elliottii). Wildlife species that commonly inhabit developed and ruderal areas of NAVSTA Mayport are mourning dove (Zenaida macroura), rock dove (Columbia livia), cattle egret (Bubulcus ibis), meadowlark (Sturnella magna), blue jay (Cyanocitta cristata), fish crow (Cornus ossifragus), northern mockingbird (Mimus polyglottos), American robin (Turdus migratorius), European starling (Sturnus vulgaris), house sparrow (Passer domesticus), and gray squirrel (Sciurus carolinensis).

4.4.1.4 Managed Forests. The predominant forest type on NAVSTA Mayport is slash pine plantation (see Figure 4-4). This community has low plant and wildlife species diversity. Pine plantations observed on the station had closed canopies, allowing little light penetration to the ground level. Other species found included Virginia creeper (Parthenocissus quinquefolia), greenbriar (Smilax sp.), and pennywort (Hydrocoyle sp.).

Other forested areas of NAVSTA Mayport are in a more natural condition and have greater species diversity. The coastal hammock forests (see Figure 4-4) are important to wildlife species throughout the year, but even more so during migration periods. Tree species identified in these coastal hammocks include cabbage palm, live oak, hickory (Carya sp.), American holly (Ilex opara), sweet bay magnolia (Magnolia virginiana), red maple (Acer rubrum), and red cedar (Juniperus silicicola). Understory and ground cover species found in the hammock community include wax myrtle, dahoon (Ilex cassine), pokeweed (Phytolacca americana), devils-walkingstick (Aralia spinosa), saw palmetto (Serenoa repens), greenbriar, muscadive (Vitus rotundifolia), poison ivy (Toxicodendron radicans), pennywort, sedges (Carex sp.), and cinnamon fern (Osmunda cinnamomea). Bird species present in the hammock during the October site survey are red-bellied woodpecker (Melanerpes carolinus), common flicker (Colaptes auratus), Carolina wren (Thryothorus ludovicianus), blue jay, gray catbird (Dumetalla carolinensis), and northern mockingbird.

4.4.1.5 Natural Resource Management. Nearly all management of natural resources is channeled into landscape maintenance, drainage, and erosion and pest control. The NAVSTA Mayport management plan document (Navy, 1984c) describes management practices in effect. An additional management plan is being prepared that addressed natural resources and related concerns in more detail.

4.4.1.6 Recreationally Important Wildlife. The natural resource of greatest recreational importance on NAVSTA Mayport is the saltwater sport fishery. The Atlantic Ocean and south shore of the St. Johns River provide numerous species of sport fish accessible to NAVSTA Mayport personnel fishing directly from the shore or from boats harbored in the Mayport basin. In addition, Lake Wonderwood provides resources for freshwater fishing. The 20-acre manmade lake has been stocked with bass and bream under a cooperative agreement with the aid of the U.S. Fish and Wildlife Service and Florida Game and Fresh Water Fish Commission. In the past, small game has been hunted in old field communities of NAVSTA Mayport, but hunting is no longer allowed.

4.4.2 Endangered, Threatened, and Rare Species. Species determined to be endangered or threatened are protected by the U.S. Fish and Wildlife Service under the Endangered Species Act of 1973. Amendments to this act provide that all Federal agencies shall carry out programs for the conservation of listed endangered and threatened species by ensuring that action authorized, funded, or carried out by them are not likely to

jeopardize the continued existence of any endangered or threatened species or result in the destination or adverse modification of habitat of such species which is determined by the Secretary of the Interior to be critical (OPNAVINST 5090.1, 1983). A list of Federally protected species is published and updated periodically in the Federal Register. In addition, the State of Florida protects a number of wildlife species under its Endangered and Threatened Species Act of 1977. The Florida Game and Fresh Water Fish Commission administers this law and publishes official lists of endangered and potentially endangered fauna and flora in Florida. The following sections present information about threatened, endangered, or protected species that occur or may have suitable habitat on NAVSTA Mayport.

4.4.2.1 Shortnose Sturgeon. The shortnose sturgeon (Acipenser brevirostrum), a fish of coastal marine waters and estuaries, is designated endangered by both the U.S. Fish and Wildlife Service and the Florida Game and Fresh Water Fish Commission. The fish rarely ranges south of central South Carolina. Its occurrence in Florida is based on a single speciman taken in Lake George on 11 May 1949. The habitat for this species is in areas that could be adversely impacted by potential contaminants from NAVSTA Mayport (sites 8, 9, 10, 11, 14, and 16); however, the occurrence of the species would be extremely rare.

4.4.2.2 American Alligator. The American alligator (Alligator mississippiensis), whose population had declined drastically in recent years, has increased in numbers to a stable population level as the result of protection and careful management. The state designation for this reptile has been downgraded to a species of special concern. The alligator may be found in canals and wetland areas throughout NAVSTA Mayport. The alligator may be found in areas adjacent to and potentially impacted by sites 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 16 on NAVSTA Mayport. Therefore, the alligator is a potential receptor for contaminants migrating from NAVSTA Mayport.

4.4.2.3 Eastern Indigo Snake. The eastern indigo snake (Drymarchon corias cooperi) has experienced population losses from overexploitation by snake collectors, disturbance of its habitat in upland situations [especially in gopher tortoise (Gopherus polyphemus) burrows], and to some degree from habitat loss. State and Federal agencies have designated the indigo snake as threatened. Occurrence of this reptile has not been documented on NAVSTA Mayport, but it is likely that it may inhabit coastal hammocks and forests on the station, especially where Kathryn Abby Hanna Park borders the station along the Atlantic beaches (see Figure 4-4). This area is relatively undisturbed and provides suitable indigo snake habitat. The areas where indigo snakes occur on NAVSTA Mayport are not expected to be impacted by any of the sites identified during the Initial Assessment Study (IAS).

4.4.2.4 Atlantic Loggerhead Turtle. The Atlantic loggerhead turtle (Caretta c. caretta) ranges throughout temperate and subtropical waters in the Atlantic Ocean and Gulf of Mexico. The turtle is known to nest on

north Florida's beaches from May through September. Although no nesting records are available for loggerhead turtles on beach areas of NAVSTA Mayport, it is likely that nesting does occur. Other species of protected sea turtles are not expected to nest on beaches in the vicinity of NAVSTA Mayport. These potential nesting areas for Atlantic loggerhead turtles are not expected to be impacted by any of the sites identified during the IAS.

4.4.2.5 Arctic Peregrine Falcon. The arctic peregrine falcon (Falco peregrinus tundrius) is found in Florida as a migrant and a winter resident. Winter habitat requirements include an adequate source of prey (usually other birds) and trees suitable for perching and roosting. Since suitable habitat is found on NAVSTA Mayport, presence of the peregrine falcon can be expected during winter months. Decline of the falcon has been attributed to ingestion of chemical contaminants concentrated in its food supply. Efforts to avoid use of such toxic and long-lived pesticides and initiation of captive breeding programs have helped the peregrine recover to some degree. Peregrine falcon perching areas may occur in the vicinity of sites identified during the IAS at NAVSTA Mayport (sites 2, 3, 4, 5, 6, and 14).

4.4.2.6 Bald Eagle. The State of Florida contains habitat for resident and migrant bald eagles (Haliaeetus leucocephalus), which are designated endangered and threatened by Federal and State agencies, respectively. Like the falcon, eagles have decreased in numbers as a result of pesticide contamination, loss of habitat, human disturbance of nests, and shooting. Eagles are not residents on NAVSTA Mayport. Although no eagle nests are known on NAVSTA Mayport, a nest is located in Cedar Swamp south of Fort Caroline National Memorial, approximately three miles west of the station.

4.4.2.7 Wood Stork. The wood stork (Mycteria americana) is a colonial wading bird designated as endangered by State and Federal agencies. Wood storks require wetlands for feeding and shrub swamp habitat for roosting and nesting. Although no roosting or nesting activity is reported on NAVSTA Mayport, suitable feeding areas occur in wetlands associated with Sherman Creek (the major drainage for sites 2, 3, 4, 5, and 6, and the two dredge spoil areas) (see Figure 4-4). This area has experienced negative impacts from past dredge spoil deposition and is threatened with additional pressure from dredging activities.

4.4.2.8 Least Tern. The least tern (Sterna antillarum) is a shore bird of the southeastern coasts and inhabits open, sandy beaches. Natural nesting sites occur between the shoreline and vegetated areas in the beach profile (see the dune and beach communities area on Figure 4-4). Nonnatural nest sites include landfills, parking lots, construction sites, and tar/stone roof tops. The tern feeds on small bait fish taken from estuarine and ocean waters.

The least tern is designated threatened by Florida Game and Fresh Water Fish Commission. The reason for the decline of this species has been disturbance by man in the form of egg and plume collection and, more recently, from destruction of beach habitat by land development. The tern occurs and nests on NAVSTA Mayport. When nests are located in areas where station activities are inflexible, they are moved to suitable areas with lower chance of disturbance. Nesting activity in areas away from threatening activities remain undisturbed by humans. Relocation of tern nest is conducted under appropriate agency direction.

4.4.2.9 Southeastern Kestrel. The southeastern kestrel (Falco sparverius paulus) is a small falcon inhabiting open pine forests, clearings, and open areas along rivers, coasts, and urban areas. The kestrel feeds primarily on insects but also preys upon rodents, reptiles, and small birds. This subspecies breeds throughout Florida and nests in abandoned woodpecker cavities or other similar structures. Observations indicate that this species' population has decreased noticeably in recent years, possibly because of the destruction of breeding sites. The occurrence of this falcon on NAVSTA Mayport is considered likely in forested areas (see Figure 4-4 for locations of forested areas) where dead trees are available for roosting and nesting. Some of these potential nesting areas are located near contamination sites identified on NAVSTA Mayport (sites 2, 3, 4, 5, 6, and 14). Management for the southeastern kestrel should include retaining dead trees in woodlands to provide suitable habitat.

4.4.2.10 West Indian Manatee. The west indian manatee (Trichechus manatus latirostris) is found in the vicinity of NAVSTA Mayport both offshore and in the St. Johns River. Use of the lower St. Johns River by manatees is heaviest during migration in fall and spring. During the winter, manatees take advantage of higher water temperatures associated with springs and discharge waters from power plants. Manatees are large and slow moving, which is a great disadvantage in the river. Heavy shipping traffic combined with channels of inadequate depth account for a majority of manatee deaths in the area. Manatees may be found near potential contamination sites (sites 8, 9, 10, 11, 14, and 16), which may impact their habitat.

## 4.5 PHYSICAL FEATURES.

4.5.1 Climatology. The climate at NAVSTA Mayport is subtropical, with extensive marine influence. Rainfall in the vicinity of NAVSTA Mayport averages 50.8 inches annually. The months of highest rainfall are June through September, when the average precipitation amounts vary from 5.28 to 7.19 inches. The months with lowest rainfall are November through January, with 1.95 to 2.99 inches as a historical average (see Table 4-1). Precipitation during the period of April through September usually occurs as thunderstorms, with large amounts falling in a short period of time. Because of the station's proximity to the Atlantic Ocean, tropical storms are not unusual. Tropical storms usually bring

Table 4-1

Climatological Data in the Vicinity of Naval Station Mayport, Florida

| Measurement* | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sep. | Oct. | Nov. | Dec. | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average Precipitation (inches) | 2.99 | 3.68 | 3.41 | 2.67 | 4.91 | 5.39 | 5.76 | 5.28 | 7.19 | 4.75 | 1.95 | 2.78 | 50.8 |
| Average Temperature (°F) | 54.7 | 56.0 | 61.8 | 68.1 | 74.2 | 79.0 | 80.8 | 80.6 | 79.1 | 71.8 | 63.2 | 56.8 | 68.8 |

*Based on 42 years of record (1940 to 1982).

Source: National Climatic Data Center, 1983.

high winds and prolonged rainfall and can quickly result in flooding at the station. The mean annual lake evaporation rate in the area of NAVSTA Mayport is in excess of 50 inches.

July and August are the warmest months at NAVSTA Mayport, with a maximum average temperature of 80.8 degrees Fahrenheit (°F). January has the lowest temperature, with a monthly average of 54.7°F. The annual mean temperature is 68.8°F. The temperatures are moderated by the marine influence.

4.5.2 Physiography and Topography. The topography of northeastern Florida is controlled by a series of ancient marine terraces that formed during the Pleistocene, when sea level was higher than at present. Seven terraces are recognized in northeastern Florida (Leue, 1966); NAVSTA Mayport is located on the remnants of two of the terraces, the Pamlico and Silver Bluff terraces. These terraces have been modified by sand dune development, stream erosion, and especially by the dredging and filling activities at NAVSTA Mayport.

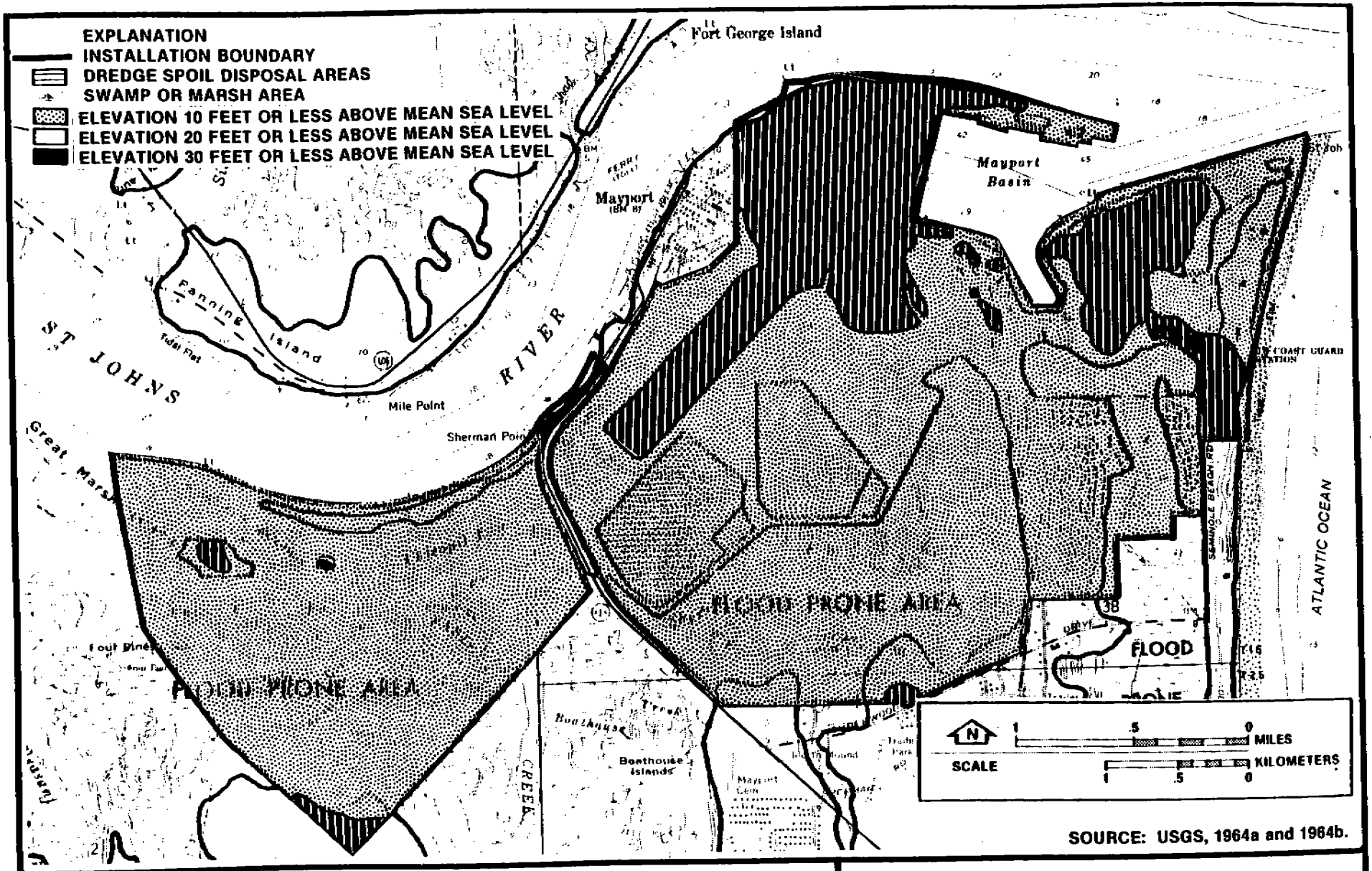
The land surface exhibits little relief (see Figure 4-5), and elevations on-station range from about 0 to 30 feet mean sea level [Navy, n.d.(b)]. Many areas at NAVSTA Mayport have been filled with dredge spoil from construction of the turning basin. The elevations of the runways are higher than the surrounding land to provide drainage and serve as a drainage divide between the southeast and northwest areas of the station (Geraghty and Miller, 1983).

NAVSTA Mayport is bounded by the St. Johns River to the north and northwest, by Sherman Creek to the south, and by the Atlantic Ocean to the east. The City of Mayport lies to the northwest, between NAVSTA Mayport and the St. Johns River.

4.5.3 Geology and Structure. NAVSTA Mayport is located in the southeastern Coastal Plain physiographic province. The structures that controlled the distribution of sediments in northeastern Florida are the Peninsular Arch and the Southeast Georgia Embayment; NAVSTA Mayport lies at the southern boundary of the embayment. Fifteen hundred feet of Eocene and younger age sediments was deposited in the region underlying NAVSTA Mayport.

NAVSTA Mayport is situated on remnant Holocene and Pleistocene marine terraces. The geologic sequence underlying NAVSTA Mayport (see Figure 4-6) consists of flat-lying unconsolidated deposits of sands, silts, and clays overlying a thick sequence of marine carbonate rocks.

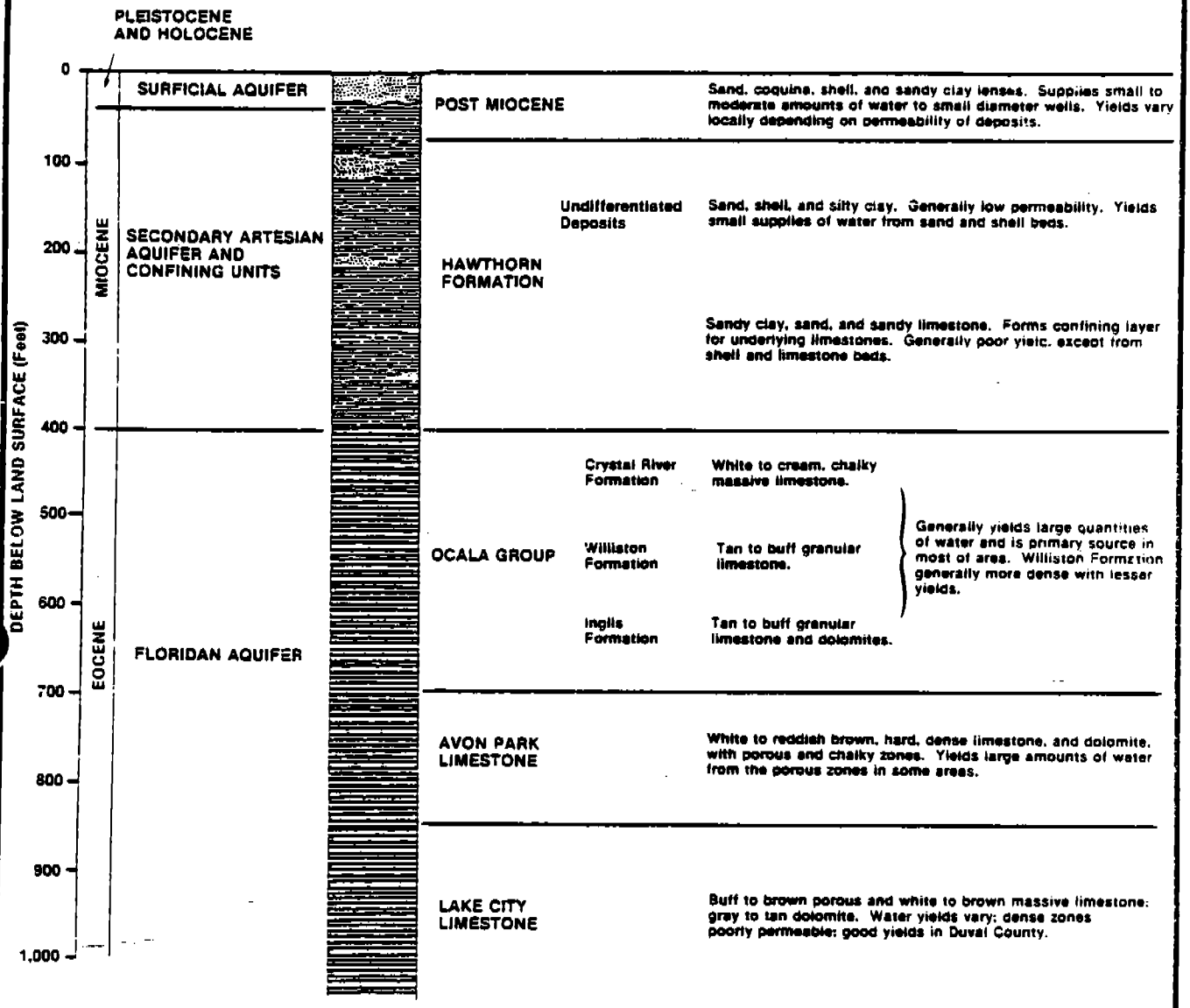
The post-Miocene age sediments were formed in lagoonal and estuarine environments. The uppermost sediments, extending to a depth of about 40 feet, comprise the shallow aquifer and are highly variable in content. These sediments may include coquina, shelly sands, silts, sands, clay, and shell beds.




SOURCE: USGS, 1964a and 1964b.

**Figure 4-5**
**TOPOGRAPHY OF NAVAL STATION MAYPORT**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**




SOURCES: Geraghty and Miller, 1983.
Florida Bureau of Geology, 1970.

Figure 4-6
GENERALIZED GEOLOGIC COLUMN
REPRESENTATIVE OF THE MAYPORT AREA

INITIAL ASSESSMENT STUDY
NAVAL STATION
MAYPORT, FLORIDA

These sediments are underlain by silty clays, clays, and clayey sands of Pleiocene and upper Miocene age. Beneath these is the Hawthorn Formation, which consists primarily of calcareous, phosphatic, sandy clays with occasional thin, discontinuous lenses of sands, limestones, and dolostones. The Hawthorn Formation serves as a confining layer that separates the shallow aquifer from the underlying Floridan Aquifer, although the permeable sand and limestone layers within the confining clays form what is referred to as the secondary artesian aquifer.

The basal portion of the Hawthorn Formation generally coincides with the top of the Floridan Aquifer. The Floridan Aquifer consists, in order of increasing depth, of the Ocala Group, consisting of the Crystal River, the Williston, and the Inglis Formations; Avon Park Limestone; and the Lake City Limestone. Figure 4-6 shows the geologic formations, with notations on their hydrogeologic characteristics, present in the vicinity of NAVSTA Mayport.

4.5.4 Soils. Soils in the vicinity of NAVSTA Mayport consist mainly of sand, shell, and clay with organic peats in the salt marsh areas. The western area of the station has been built up by dredged spoil from the St. Johns River and the Mayport basin. The dredged material ranges from sand to silt and consolidation occurs very slowly (Navy, 1981a).

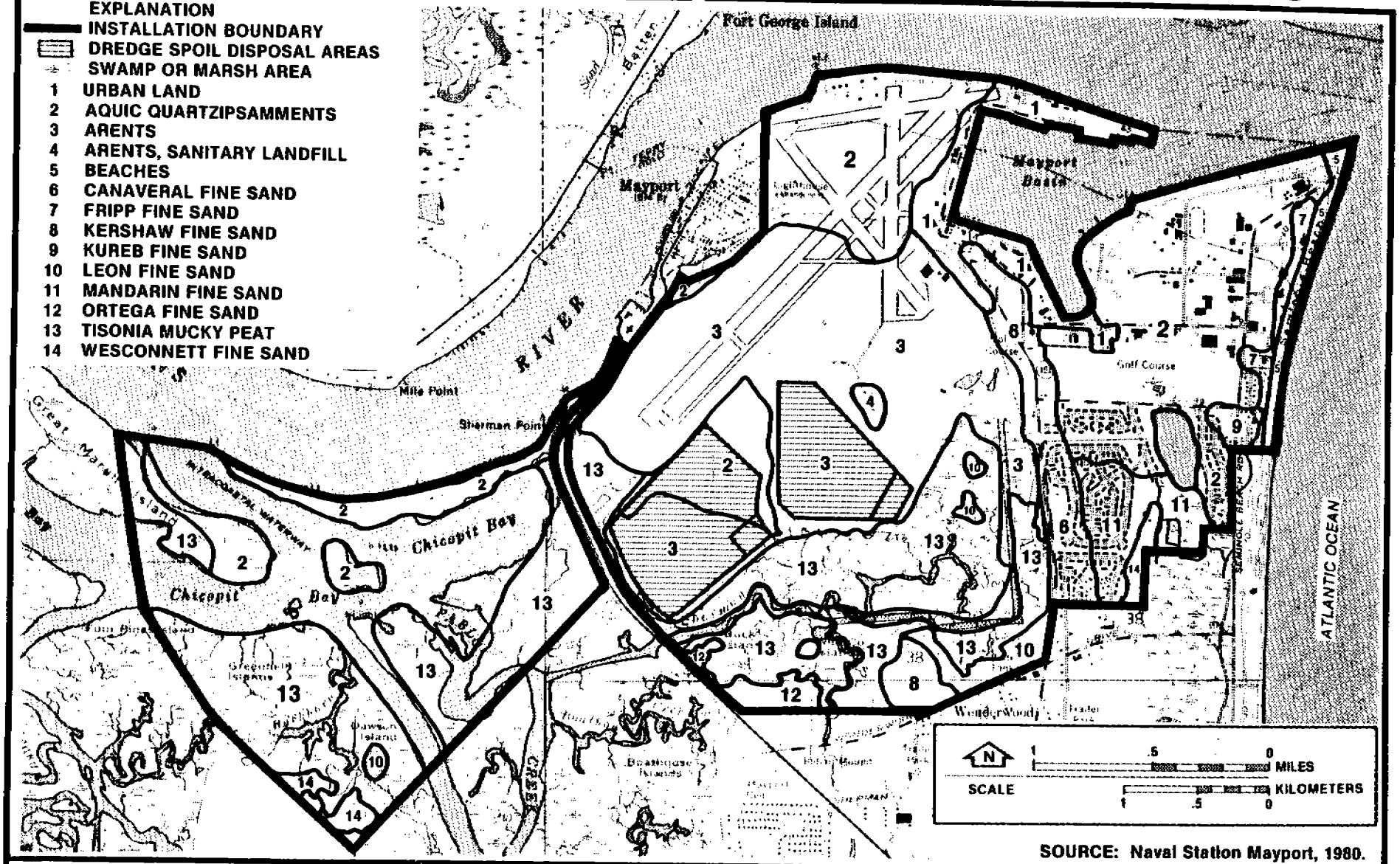
The U.S. Soil Conservation Service (SCS) survey (1978) of Duval County, Florida, indicates that 11 soil types occur in the immediate vicinity of NAVSTA Mayport (see Figure 4-7). These soils can be placed in three groups:

1. Soils of the sand ridges,
2. Soils of the tidal marsh, and
3. Soils of the flatwoods.

Soils of the sand ridges consist of well-drained, nearly level to moderately steep soils that are sandy to a depth of 80 inches or more. At NAVSTA Mayport, these soils cover much of the western two-thirds of the station and have been cut and filled or reworked by dredging and earth-moving operations. At NAVSTA Mayport, the soils of the sand ridges are represented by Aquic Quartzipsammants; Arents and Arents, sanitary landfill; and several classifications of fine sand including Beaches, Mandarin fine sand, Fripp fine sand, and Canaveral fine sand.

Aquic Quartzipsammants are sandy soils variable in composition, containing some heavy minerals. Some areas were originally ridges that have been excavated to a depth below natural ground level and reworked; others are deep areas of dredge spoil. Thickness of the mixed material ranges from two to 12 feet. Under natural conditions, these soils normally have very rapid permeability and a water table at a depth less than 40 inches.

Arents soils are nearly level, poorly drained soils that have been altered by earth-moving operations. Typically these soils are two to




SOURCE: Naval Station Mayport, 1980.

**Figure 4-7**
**SOIL TYPES FOUND ON NAVAL STATION MAYPORT**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

20 feet thick and consist of mixed soil material, fine sand, sandy loam, and sandy clay loam. Weakly cemented subsoil may also be present. Under natural conditions, these soils have a water table at a depth of 10 to 30 inches; permeability is variable.

Arents sanitary landfill soils are similar to Arents, distinguished by the fact that they overlie sanitary landfill cells of variable thickness; the depth to water table is dependent on the thickness of the cells.

Beaches soils consist of narrow strips of nearly level, fine sand along the Atlantic Ocean. These areas are inundated with salt water daily at high tide. This material is a mixture of quartz sand, heavy materials (principally rutile and ilmenite), and fragments of seashells. It is subject to movement by wind and tide and is bare of vegetation.

Mandarin fine sand is a nearly level, somewhat poorly drained soil on narrow to broad ridges slightly higher than the adjacent flatwoods. Typically, the surface layer and subsurface layer is fine sand about 26 inches thick. The subsoil is fine sand that extends to a depth of 46 inches. Except for the lower six inches, it is weakly cemented and well coated with organic matter. Between depths of 73 and 80 inches is weakly cemented, black fine sand, and the sand grains are coated with organic matter. Under natural conditions, this soil has a water table at a depth of 20 to 40 inches for four to six months during most years. The water table is at a depth of 10 to 20 inches for periods of as much as two weeks in some years. Permeability is moderate to moderately rapid in the weakly cemented layers and rapid in all other layers.

Fripp fine sand is a gently sloping to sloping, excessively drained soil on narrow to broad ridges along the Atlantic coast. Typically, the surface layer is fine sand about six inches thick. Below this, to a depth of 80 inches or more, is fine sand that contains horizontal bands of black heavy minerals. This soil has a water table at a depth of more than 72 inches. Permeability is rapid throughout.

Canaveral fine sand is a nearly level to gently sloping, moderately well drained to somewhat poorly drained soil on a broad ridge near the Atlantic coast. Typically, the surface layer is fine sand about six inches thick. Below this is fine sand of 34 inches; shell fragments compose about 45 percent of this layer and extend to a depth of 65 inches or more. Under natural conditions, this soil has a water table at a depth of 10 to 40 inches for two to six months and at a depth of 40 to 60 inches for four to eight months during most years. Permeability is very rapid throughout.

Soils of the tidal marsh essentially make up the remainder of the western two-thirds of NAVSTA Mayport. These soils commonly occur in broad expanses of tidal marsh. At NAVSTA Mayport, these soils are represented by Tisonia mucky peat and are level to nearly level, poorly drained soils. Typically, a surface layer of mucky peat about 18 inches deep is

underlain by clay that extends to a depth of 65 inches or more. The soil is tidally inundated twice a day, has a water table at a depth of less than 10 inches, or is covered by water for at least half of each year. Permeability is rapid in the surface layer and very slow in the clayey material.

Soils of the flatwoods consist of sandy soils that are nearly level to gently sloping and are variably drained. At NAVSTA Mayport, these soils are represented in a very small area within the tidal marshes by Wesconnet fine sand. Wesconnet sand is very poorly drained and occurs in shallow depressions. Typically, there is a fine, black sand layer at the surface about 2 inches thick, underlain by weakly cemented sand 2 to 32 inches thick, underlain by fine sand between depths of 44 to 80 inches. The soil has a water table depth of 0 to 10 inches and is inundated for at least half of each year. Permeability is rapid between the surface layer and between depths of 32 and 44 inches and moderate to moderately rapid between depths of 2 and 32 inches and below a depth of 44 inches.

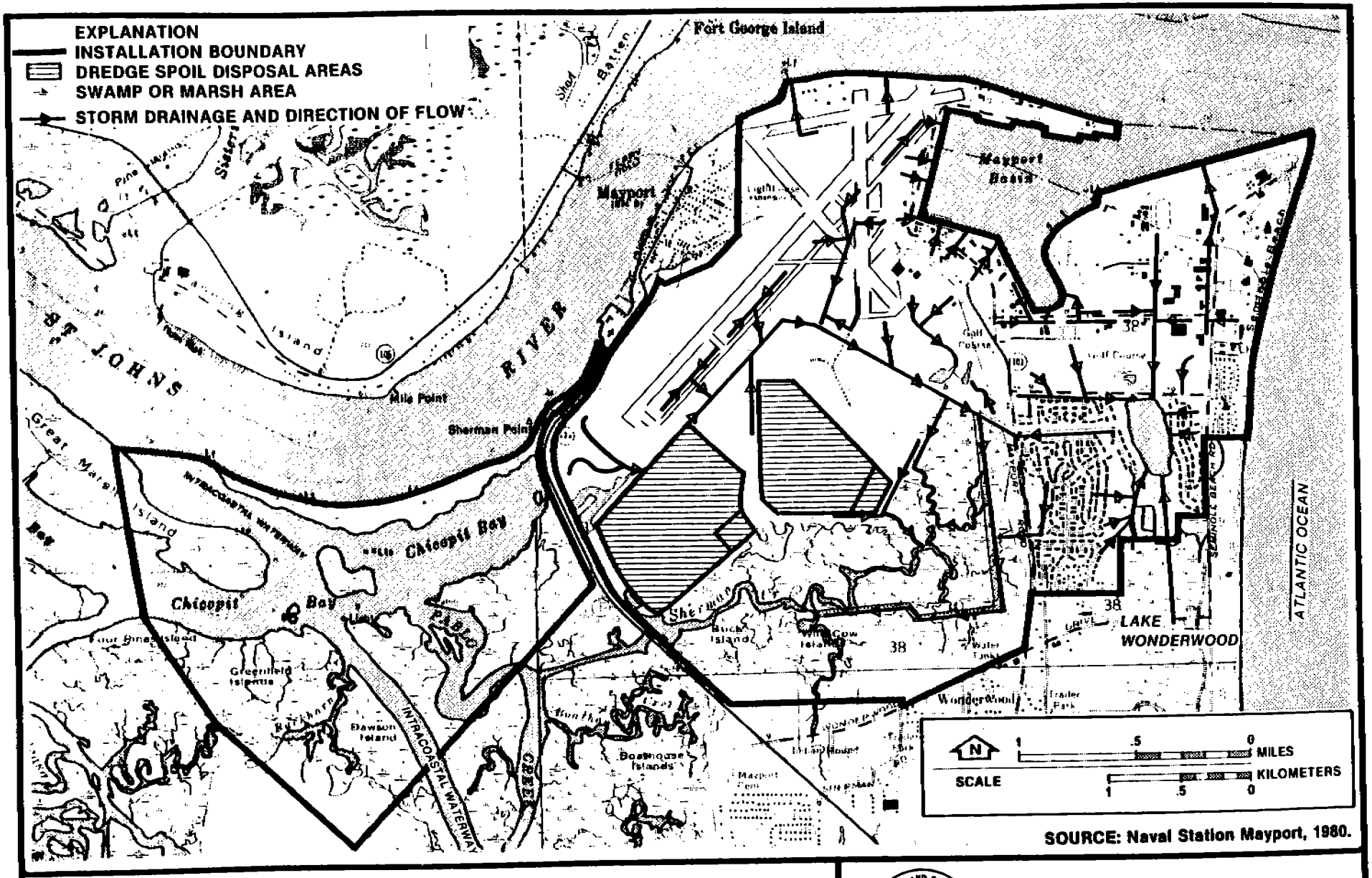
4.5.5 Hydrology.

4.5.5.1 Surface Hydrology. NAVSTA Mayport is situated at the mouth of the St. Johns River, on the south bank. South of the St. Johns River, a tidal marsh area extends into the western edge of NAVSTA Mayport. Major wetland areas exist in the southwestern portions of the station property in the area west of Mayport Road and south of the magazine area, and along the western edge of Ribault Bay Village property. Spoil disposal sites have displaced some of the wetland areas north of the magazines. Storm water ditches and natural drainages on NAVSTA Mayport are presented in Figure 4-8 and described in the following paragraphs.

Sherman Creek drains surface water runoff from the area with slowly permeable soils, south of the landfills. The landfills are drained by a perimeter canal system that flows east and discharges into Sherman Creek, which ultimately discharges into the Intracoastal Waterway by way of Pablo Creek and Chicopit Bay. Soils on the north and east edges of NAVSTA Mayport along the St. Johns River and the Atlantic Ocean, respectively, are very sandy and, therefore, a high percentage of the rainfall infiltrates into the soils. The runways are elevated above the surrounding areas and serve as a drainage divide between the northwest and southeast portions of NAVSTA Mayport.

The station has one 20-acre freshwater lake, Lake Wonderwood, which was created by dredging conducted to provide fill for the adjacent housing area and for the beach. Several areas of the lake have depths of 20 feet, and it is used by the residents for fishing and recreation.

The Mayport basin was dredged into the former area of Ribault Bay. It was dredged to a depth of 29 feet in 1941 and then to a depth of 40 feet in 1952; today it exists as a major surface water feature at NAVSTA Mayport.




SOURCE: Naval Station Mayport, 1980.

**Figure 4-8**
**STORM WATER DITCHES AND NATURAL DRAINAGES ON NAVAL STATION MAYPORT**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

4.5.5.2 Hydrogeology. The area is underlain by several water-bearing formations that vary in water availability and quality. In descending order, these formations are:

1. Marine deposits of Pleistocene and Holocene (Recent age);

2. Undifferentiated deposits and the Hawthorn Formation (Miocene age); and

3. The Ocala Group, consisting of the Crystal River, Williston, and Inglis Formations; the Avon Park Limestone; and the Lake City Limestone (all Eocene age), which, with the hydraulically connected limestone in the lower part of the Hawthorn Formation, compose the Floridan Aquifer.

Figure 4-6 shows the geologic formations with regional characteristics and approximate thicknesses that vary from one locality to another. The Floridan Aquifer, which underlies all of northeast Florida, is the principal source of water for the area.

The top of the Floridan Aquifer is at a depth of about 400 feet in Duval County. It is overlain by sands, sandy clay, and shell deposits of Miocene, Pliocene, Pleistocene, and Holocene ages. These deposits have generally low to moderate permeability and limited thickness and, therefore, yield only small quantities of water to wells (see Figure 4-6).

With regard to the hydrogeology at NAVSTA Mayport, it has been indicated (Geraghty and Miller, 1983) that:

1. Sediments extending to a depth of about 40 feet comprise a shallow aquifer and consist of sand, shell, and clay;

2. Low-permeability Pliocene and upper Miocene deposits lie above the Hawthorn Formation, which serves as a confining layer that separates the shallow aquifer from the underlying Floridan Aquifer;

3. The clays of the Hawthorn Formation contain discontinuous lenses of permeable sand and limestone, which form what is referred to as the secondary artesian aquifer; and

4. The base of the Hawthorn Formation coincides with the top of the Floridan Aquifer.

At NAVSTA Mayport, the shallow aquifer consists of the near-surface layers of sand and shell fragments. These deposits vary considerably in composition, thickness, and permeability in the area. The relatively permeable surficial soils of the northern portion of the base were deposited as point bar and spit sediments. The area to the south was

occupied by Ribault Bay and tidal marsh, in which finer, less-permeable silts and organic sediments have accumulated. This relationship can be seen in the geologic cross-section of the upper sediments shown in Figure 4-9.

The hydraulic properties of the shallow aquifer were determined in a study conducted at NAVSTA Mayport (Franks, 1980). The transmissivity of the principal water-bearing sand and shell zone, at a depth of 35 to 50 feet, was determined to be 320 gallons per day per foot.

In the area of NAVSTA Mayport, ground water movement is primarily lateral through the shallow aquifer because vertical movement is impeded by underlying clayey sediments.

The lateral movement of ground water in the shallow aquifer is controlled by the topography. Shallow ground water moves from areas of topographic highs to areas of natural discharge, such as the St. Johns River, streams, ditches, or swamps.

South of the runway, ground water flow is more complicated because of the elevated topography in the dredge spoil disposal areas and landfill areas and because of the system of relatively deep ditches. In general, the ground water in the dredge spoil disposal areas is mounded and produces a shallow ground water flow in all directions away from these areas and toward the ditches. The flow may result in shallow ground water filtering through disposal sites 2, 4, 5, and 6.

A secondary artesian aquifer exists in the sand and limestone lenses that are interbedded in the clayey confining units between the shallow aquifer and the underlying Floridan Aquifer. The most productive zone in this aquifer, a limestone layer in the upper part of the Hawthorn Formation, is notably absent in the Mayport area. The lateral ground water flow in the aquifer in the Mayport area is toward the northeast (Geraghty and Miller, 1983).

The deep or Floridan Aquifer consists of limestone and dolostone of the Ocala Group, Avon Park Limestone, and Lake City Limestone. The top of the Floridan Aquifer occurs at a depth of about 400 feet at Mayport. Published transmissivities of the Floridan Aquifer in eastern Duval County range from approximately 85,000 to 160,000 gallons per day per foot (Geraghty and Miller, 1983).

Ground water in the Floridan Aquifer at Mayport is, reportedly, flowing south toward areas of heavy pumpage along the coast. Floridan wells in the Mayport area are under sufficient artesian pressure to flow at the surface, and there is an upward hydraulic gradient between the Floridan and shallow aquifers (Geraghty and Miller, 1983).

4.5.5.3 Water Quality. Limited water quality data for the surface waters at NAVSTA Mayport are available from the U.S. Geological Survey

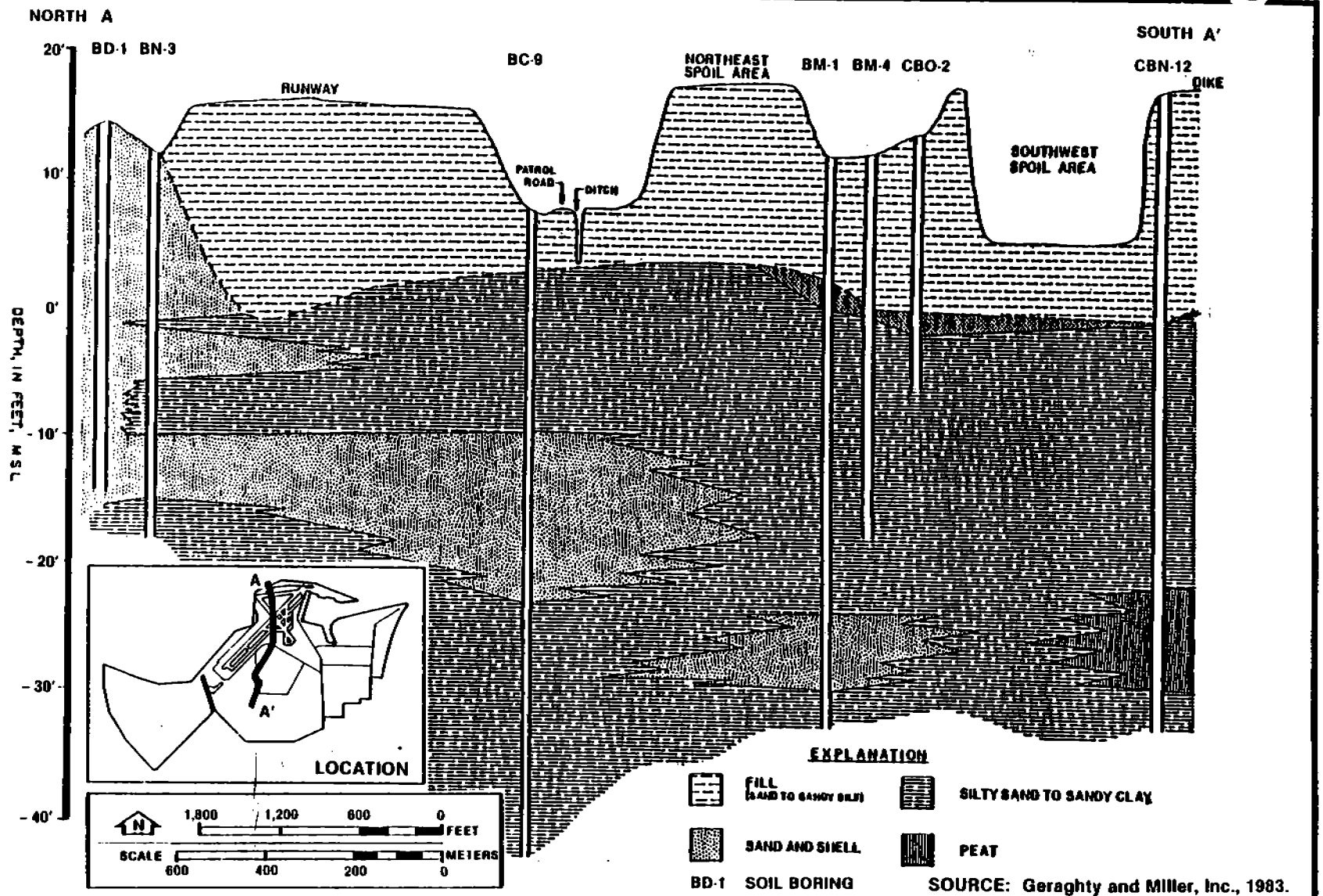



**Figure 4-9**
**GEOLOGIC CROSS SECTION AT NAVAL STATION MAYPORT**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

(USGS). These data, which include limited information on nutrients (total Kjeldahl nitrogen, nitrate, nitrite, and phosphorus), trace metals (arsenic, cadmium, chromium, copper, lead, barium, mercury, iron, manganese, and others), and pesticides, do not show any contaminant problems with surface waters in the vicinity of the station.

The quality of water in the shallow aquifer system in Duval County is generally acceptable for most domestic, commercial, and industrial uses. In some areas, however, the water is hard and has a high iron content. In Duval County, iron concentrations in excess of 0.3 milligrams per liter are common in water from shallow aquifer wells; the hardness of water from the shallow aquifer ranges from about 60 to 180 milligrams per liter (Causey and Phelps, 1978).

At NAVSTA Mayport, a ground water investigation was recently conducted. Chemical analyses of water from depths of 14 feet and 51 feet are presented in Table 4-2 (Geraghty and Miller, 1983). These data indicate that water in the shallow aquifer in the Mayport area is fresh in the upper part but becomes increasingly brackish below a depth of about 40 feet. In another study conducted near Mayport (Frazee and McClaugherty, 1979), chloride concentrations of less than 250 milligrams per liter were found at a depth of 10 feet, and at a depth of 50 feet, the chloride concentration exceeded 4,000 milligrams per liter. The deterioration in water quality is more pronounced near the coast and the St. Johns River.

The results of the chemical analysis of water from a secondary artesian aquifer well just south of NAVSTA Mayport is presented in Table 4-3. These data indicate the water quality in the secondary artesian aquifer meet U.S. Environmental Protection Agency (EPA) drinking water standards.

Water in the Floridan Aquifer meets potable water quality standards in the Mayport area, as shown in the chemical analyses presented in Tables 4-4 and 4-5. The concentration of total dissolved solids is approximately 400 milligrams per liter, and the concentration of chlorides is about 25 milligrams per liter.

4.5.5.4 Water Supply. NAVSTA Mayport provides its own potable supply and distribution system. Raw water supply is obtained from four 12-inch-diameter Floridan Aquifer wells that withdraw water from a depth of approximately 1,000 feet. Individual well capacities range between 2.1 and 2.9 million gallons per day with a combined total effective capacity of 7.1 million gallons per day [Navy, n.d.(b); Navy, 1981b].

Potable water treatment is provided at NAVSTA Mayport by the treatment plant located at Building 283. Treatment includes aeration for removal of hydrogen sulfide and chlorination, after which the water is transferred to the adjacent 500,000-gallon ground storage tank. Prior to entering the distribution system, the water is further treated to prevent scale and corrosion and for pH control, and is post-chlorinated. The

Table 4-2

Water Quality Analyses in the Surficial Aquifer,
Naval Station Mayport, Florida

| Parameter | Well DS-256 | Well DS-263 |
|---|---|---|
| Well Depth (feet) | 63 | 14 |
| Casing Depth (feet) | 51 | 10 |
| Sampling Date | 7/7/76 | 7/8/76 |
| Temperature (field, °C*) | 22.5 | 23 |
| pH (field) | 7.3 | 6.8 |
| Specific Conductance (micromhos) | 2,250 | 750 |
| Chloride | 452 | 18 |
| Hardness, as Calcium Carbonate | 290 | 424 |
| Iron | 0.09 | 0.34 |
| Calcium | 74.0 | -- |
| Magnesium | 21.0 | -- |
| Sodium | 420.0 | -- |
| Potassium | 18.0 | -- |
| Sulfate | 16.0 | -- |
| Strontium | 0.50 | -- |

*°C = degrees Celsius.

Note: Concentrations in milligrams per liter.

Source: Geraghty and Miller, 1983.

Table 4-3

Water Quality Analyses in the Secondary Artesian Aquifer,
Naval Station Mayport, Florida

| Parameter | Well DS-119A |
|---|---|
| Well Depth (feet) | 162 |
| Sampling Date | 9/26/68 |
| Silica | 55 |
| Calcium | 46 |
| Magnesium | 16 |
| Sodium | 25 |
| Potassium | 4.7 |
| Carbonate | -- |
| Bicarbonate | 228 |
| Sulfate | 14 |
| Chloride | 25 |
| Fluoride | 0.9 |
| Nitrate | 0.3 |
| Phosphate | 0 |
| Dissolved Solids | 299 |
| Hardness (calcium, magnesium) | 182 |
| Specific Conductance (micromhos) | 442 |
| pH | 8.1 |

Note: Concentrations in milligrams per liter.

Source: Geraghty and Miller, 1983.

Table 4-4

Water Quality Analyses in the Floridan Aquifer,
Naval Station Mayport, Florida

| Parameter | Well N-2 |
|---|---|
| Well Depth (feet) | 1,000 |
| Casing Depth (feet) | 435 |
| Sampling Date | 10/12/61 |
| Total Solids | 444 |
| Loss on Ignition | 91 |
| Fixed Solids | 353 |
| Calcium | 35.3 |
| Magnesium | 26.2 |
| Sodium and Potassium | 33.5 |
| Iron | 0.2 |
| Silica | 1.0 |
| Sulfates | 74.2 |
| Chlorides | 21.3 |
| Alkalinity (Methyl Orange)<br>(Phenolphthalein) | 148<br>4 |
| Total Hardness | 196 |
| Carbonate Hardness | 148 |
| Noncarbonate Hardness | 48 |
| Free Carbon Dioxide | None |
| pH | 7.0 |

Note: Concentrations in parts per million.

Source: Geraghty and Miller, 1983.

Table 4-5

Water Quality Analyses in the Floridan Aquifer,
Naval Station Mayport, Florida

| Parameter | Well N-4 |
|---|---|
| Well Depth (feet) | 1,000 |
| Casing Depth (feet) | 419 |
| Sampling Date | 5/31/79 |
| Total Suspended Solids | 11 |
| Calcium Hardness | 182 |
| Chloride | 22.2 |
| Magnesium Hardness | 98 |
| Nitrate | 0.04 |
| Total Dissolved Solids | 394 |
| Total Hardness | 280 |
| Alkalinity | 138 |
| Noncarbonate Hardness | 142 |
| Silica | 22.2 |
| Sulfate | 129 |
| Chloride | 25 |
| Calcium | 72.83 |
| Magnesium | 23.71 |
| Sodium | 15.14 |
| Iron | 0.4 |
| Potassium | 2.53 |
| Carbonate | 0 |
| Bicarbonate | 138 |
| Turbidity (NTU*) | 0.47 |
| pH (Laboratory) | 7.6 |

*NTU = nephelometric turbidity units.

Note: Concentrations in parts per million.

Source: Geraghty and Miller, 1983.

water is finally transferred to a 250,000-gallon elevated tank to provide sufficient operating pressure in the distribution system [Navy, n.d.(b)].

Water supply at Ribault Bay Village is obtained from two artesian wells (depth unavailable). The water from these wells is aerated, pumped into a 50,000-gallon ground storage tank, and is then distributed through a hydropneumatic tank.

An inventory of wells within one mile of the potential contamination sites at NAVSTA Mayport has been conducted. Data from this inventory are available (Geraghty and Miller, 1983), and well locations are shown in Figure 4-10. There are many unused wells at NAVSTA Mayport; many of these wells were sealed with grout during a well abandonment program in 1974. NAVSTA Mayport records indicate that four wells that could not be located during the 1974 abandonment program had been covered over at an unknown date.

4.6 MIGRATION POTENTIAL. Contaminant migration can occur in surface water through streams, canals, and ditches or in ground water. Ground water can discharge to surface water bodies such as streams and ditches. The potential for contaminant migration in ground water is related to the properties of the aquifer (hydraulic gradient, chemical and physical properties of the contaminant, and quantity and duration of contaminant exposure to potential migration pathways). The velocity of contaminants traveling with ground water can be estimated from Darcy's law, which relates flow velocity to hydraulic conductivity, porosity, and hydraulic gradient.

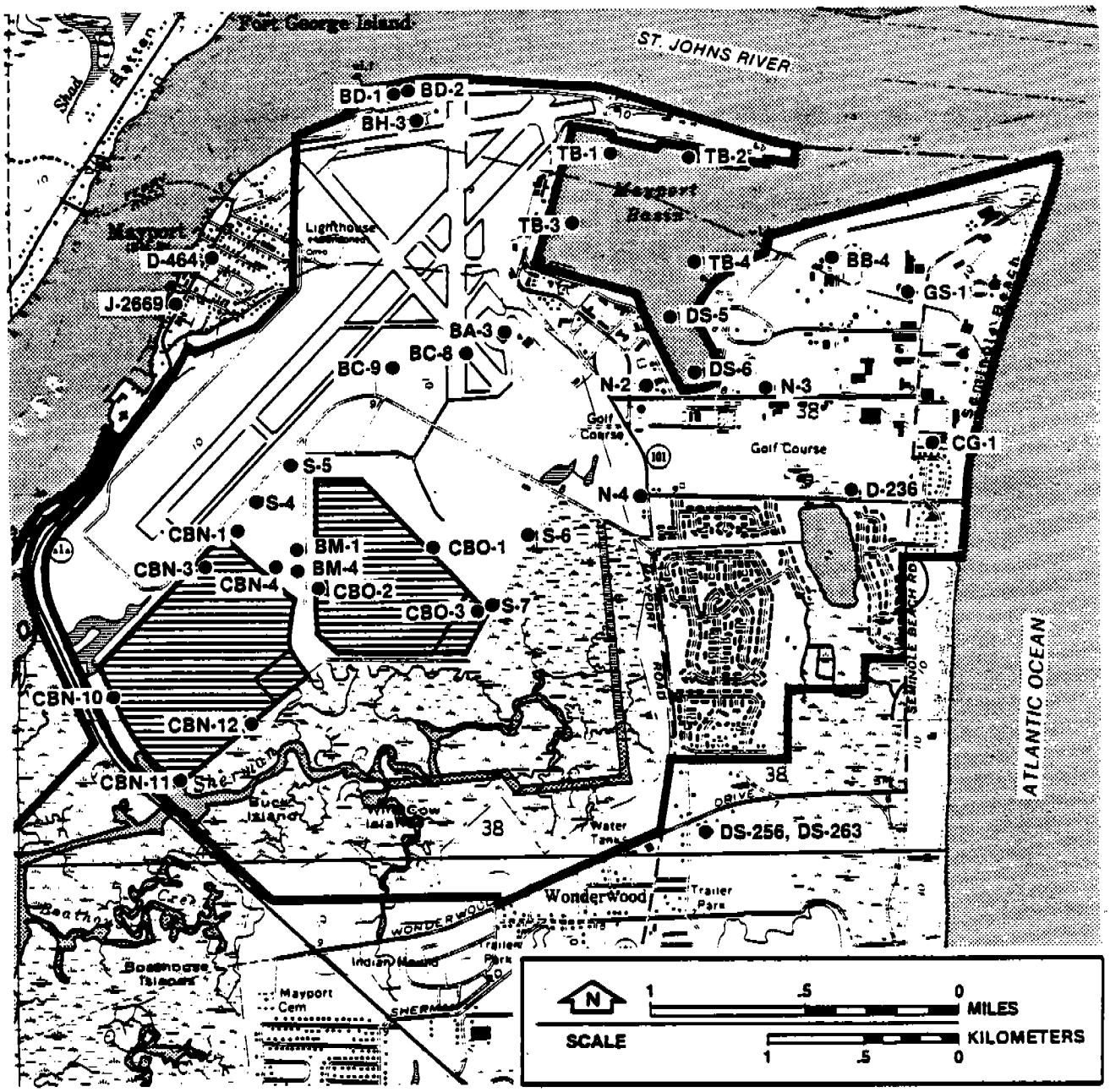
Contaminant migration at NAVSTA Mayport can occur through surface and ground water. The most likely pathways for migration through surface waters are:

1. Direct runoff and treatment system discharge into the St. Johns River and finally into the Atlantic Ocean (sites 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, and 16);

2. Perimeter canal system that drains the sanitary landfill areas (sites 2, 3, 4, 5, and 6) and flows into Sherman Creek and eventually into the Intracoastal Waterway; and

3. Runoff into Lake Wonderwood at Ribault Bay Village.

Some hydrogeologic information regarding ground water flow at NAVSTA Mayport is available from recent studies (Geraghty and Miller, 1983). Flow patterns of ground water suggested by these studies is inferential and is not based on piezometric analysis of water. USGS, in cooperation with Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), conducted an investigation at NAVSTA Mayport. The results of the investigation included the following:




SOURCE: Geraghty and Miller, Inc., 1983.

**Figure 4-10**
**LOCATIONS OF WELLS AND BORINGS ON NAVAL STATION MAYPORT**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

1. The principal water-bearing zone is a shell bed 35 to 55 feet below land surface,

2. The shallow aquifer is unconfined and ranges to depths of approximately 40 to 60 feet,

3. Water in the upper 40 feet of the aquifer is fresh but becomes increasingly brackish with depth, and

4. Aquifer testing conducted as a part of the study indicated a transmissivity of 2,400 square feet per day (320 gallons per day per foot).

Assuming an average aquifer thickness of 40 feet, the calculated hydraulic conductivity is 34 feet per day. This value can generally be applied to the areas of NAVSTA Mayport underlain by sandy soils and sediments (see Figure 4-7). This value is not appropriate for marshy or infilled marshy areas underlain by less permeable fine-grained materials. In such instances, an estimate of the hydraulic conductivity can be made based on Darcy's law and the following assumptions:

1. The unconsolidated deposits in marshy areas consist of silty sand to silty clay.

2. The average range of hydraulic conductivity for silty clay to silty sand is $10^{-1}$ to 10 gallons per day per square foot. Porosity ranges from 0.35 to 0.50 (Freeze and Cherry, 1979).

3. The average hydraulic gradient in the shallow aquifer is 0 to 10 feet per mile, based on the topography at the site and the gradient of the adjacent St. Johns River.

The rate of ground water movement is calculated from Darcy's law by the equation:

$$V = \frac{KI}{P}$$

where: V = Average linear velocity (feet per day);
K = Hydraulic conductivity (feet per day);
I = Hydraulic gradient, dimensionless; and
P = Effective porosity, dimensionless.

The assumed values yield a maximum calculated velocity of four feet per day.

In the marshy areas of NAVSTA Mayport, migration potential may be attenuated by the presence of organic sediments (as revealed by review of available boring logs) that have high organic content. These organic materials have a high cation exchange capacity and may also have good adsorption and absorption capability.

Other factors that would affect the migration of contaminants are the influence of tidal flushing, which affects not only the tidal marshes, but also the canal system around the landfills and Sherman Creek. Dry and wet weather conditions and especially high water levels in the St. Johns River will cause changes in the ground water recharge system.

During the wet season, the St. Johns River and other surface water bodies tend to recharge the shallow aquifer; during the dry season, the shallow aquifer may tend to recharge the river if the river stage drops below the water table. Flow patterns adjacent to the river bank are, therefore, difficult to define without an investigation that includes analysis for seasonal variations. The overall effect of these conditions, however, is probably a flushing of the shallow aquifer in the vicinity of the river.

# CHAPTER 5. WASTE GENERATION

5.1 INTRODUCTION. This chapter describes major waste generating operations at Naval Station (NAVSTA) Mayport. The operations described in this chapter generate, handle, store, or dispose of potentially toxic or hazardous materials. These operations include industrial and laboratory operations and activities in which pesticides; polychlorinated biphenyls (PCB); petroleum, oils, and lubricants (POL) (including organic solvents); radiological materials; and explosives are handled. No large-scale product-manufacturing operations have ever been conducted at NAVSTA Mayport. Rather, the industrial operations described in this chapter are primarily maintenance-support functions provided for facilities, surface ships, aircraft, and associated support equipment.

Operations at NAVSTA Mayport have ranged from caretaker status in 1946-1948 to very heavy operations associated with the current operations. Specific information concerning waste generation rates and waste types of the early activity was either not available or was limited. Therefore, unless otherwise stated, current Naval waste generation rates, types, and shop locations are assumed to be representative of historical Naval activity since 1942.

A summary of waste generation sources, waste types and rates, and disposal methods is presented in the following paragraphs and tables. Waste handling (storage and transportation) and waste processing are addressed in Chapters 6 and 7, respectively.

5.2 INDUSTRIAL OPERATIONS.

5.2.1 Public Works Department. The Public Works Department (PWD) operates, maintains, and repairs buildings, structures, and other facilities at NAVSTA Mayport. The PWD engineering and administrative offices are headquartered in Building 24, which was constructed in 1942. The Carpentry, Paint, Electrical, Plumbing, and Machine shops are housed in Building 38. The shop foremen have offices in Building 12. Both buildings 38 and 12 were constructed in 1942. PWD provides equipment and/or manpower for garbage pickup, all utilities operations, hazardous waste pickup and storage, and Navy-owned vehicle maintenance. Prior to 1976, PWD provided personnel for station landfill operations. From 1976 until landfill closure in 1985, landfill operations were subcontracted. The types and quantities of wastes generated by the PWD-Trades shops are presented in Table 5-1.

5.2.1.1 Carpentry Shops. The Carpentry Shop provides building construction, repair, and maintenance for structures at NAVSTA Mayport. Since 1981, asbestos that has been removed during building repair has been double-bagged with plastic bags. The asbestos has been placed in an 8-cubic-yard dumpster equipped with a lock and periodically hauled off-station for contract disposal in a landfill. Prior to 1981, asbestos

Table 5-1
Waste Generation from Public Works Department - Trades Shops, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)a | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PUBLIC WORKS DEPARTMENT (PWD) | | | | | | | | | | | | | |
| CARPENTRY SHOP | 38 | Asbestos | variable | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Off-Station Contract Disposal | |
| | | Woodscraps | variable | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Station Incinerator | |
| PAINT SHOP | 38 | Waste Paints (95% Latex, 5 % Oil) and Thinners | 440 | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Off-Station Contract Disposal | |
| | | Toluene | 440 | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Off-Station Contract Disposal | |
| | | Paint Cans, Brushes, Rags, Stirers | variable | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Station Incinerator | |
| ELECTRICAL (LINEMAN) AIR CONDITIONING/REFRIGERATION SHOPS | 38 | 1,1,1-Trichloroethane Empty Can | 1 | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Station Incinerator | |
| | | HI-P Contact Cleaner Empty Cans | 144 per year | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Station Incinerator | |
| | | Refrigeration Filters | 72 per year | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Station Incinerator | |
| | | Freon Cylinders | 300 per year | | | | | | | | | DRMO for Off-Station Contract Disposal | |
| | | Compressor Oil | 55 | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Discharged to Oily Waste Treatment Facility | |
| | | Oily Rags | variable | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Station Incinerator | |
| | | Cable | variable | DRMO for Off-Station Contract Disposal | | | | | DRMO for Off-Station Contract Disposal | | | | |
| | | Transformer Oil | 55 | Spread Along Fenceline for Weed Control | | | | | Spread Along Fenceline for Weed Control | | | Discharged to Oily Waste Treatment Facility | |
| | | Oil Filter Plates | 3 drums per year | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Station Incinerator | |

Table 5-1

Waste Generation from Public Works Department - Trades Shops, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mercury Vapor Lamps | 144 per year | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Off-Station Contract Disposal | |
| | | Ballast | variable | DRMO for Off-Station Contract Disposal | | | | | DRMO for Off-Station Contract Disposal | | | | |
| | | Fluorescent Tubes (48 Inches) | 5,200 per year | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Off-Station Contract Disposal | |
| | | Fluorescent Tubes (U-Shaped) | 832 per year | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Off-Station Contract Disposal | |
| | | Light Bulb (60 Watt) | 960 per year | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Off-Station Contract Disposal | |
| | | Light Bulb (100 Watt) | 960 per year | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Off-Station Contract Disposal | |
| | | Penetrating Blaster Empty Cans | 144 per year | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Station Incinerator | |
| PLUMBING/PIPEFITTING | 38 | Penetrating Blaster Empty Cans | 24 per year | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Station Incinerator | |
| | | Asbestos | variable | Station Landfill (Sites 1,2,4) | | | | | Station Landfill (Sites 2,4,5,6) | | | Off-Station Contract Disposal | |
| | | Scrap Metal Pipe | variable | DRMO for Off-Station Contract Disposal | | | | | | | DRMO for Off-Station Contract Disposal | | |
| | | Action Drain Cleaner | 15 | Sink Drains to STP | | | | | | | Sink Drains to STP | | |
| MACHINE/METAL TRADES SHOP | 38 | Scrap Metal | variable | DRMO for Off-Station Contract Disposal | | | | | | | DRMO for Off-Station Contract Disposal | | |
| | | Rags | variable | Station Landfill (Sites 1,2,4,5,6) | | | | | | | Station Landfill (Site 2,5,6) | Station Incinerator | |

* All values in gallons per year unless otherwise noted.

_ _ _ _ _ _ _ Information estimated.

_____ Information confirmed by station personnel.

removed from buildings was placed in trash dumpsters and landfilled on-station (sites 1, 2, 4, 5, and 6). Wood scraps generated from building construction, repair, and maintenance have been placed in the dumpsters labeled "wood only." PWD transports the wood scraps to the on-station incinerator. Prior to the incinerator coming on-line in 1979, wood scraps were landfilled on-station (sites 1, 2, 4, 5, and 6).

5.2.1.2 Paint Shop. The Paint Shop provides maintenance for buildings and structures. The shop has generated an estimated 440 gallons of waste paints and thinners each year. Historically, 95 percent of the paint used in the Paint Shop since the early 1960s has been latex. The other five percent has been oil based. Each year, 440 gallons of toluene used for cleaning operations is generated. The waste paints and thinners and toluene have been placed in 55-gallon drums. These 55-gallon drums have been placed in the fenced accumulation area behind Building 38 and then transferred by PWD to the on-station hazardous waste storage area. Prior to 1981, all wastes (paints, toluene, and thinners) generated by the Paint Shop were landfilled on-station (sites 1, 2, 4, 5, and 6). Since 1979, spent paint cans, brushes, rags, and stirrers have been placed in 55-gallon drums and transported by PWD to the on-station incinerator. Prior to 1979, these wastes were landfilled on-station.

5.2.1.3 Electrical/Lineman/Air Conditioning-Refrigeration Shops. The Electrical/Lineman shops maintain all interior and exterior electrical systems on NAVSTA Mayport. The wastes generated by the Electrical/Lineman shops include waste cable, mercury vapor lamps, and potential PCB-containing items, transformer oil, transformers, transformer oil filters from the oil filter press, and fluorescent light fixture ballasts. Transformer oils have reportedly always been filtered through an oil filter press and then reused in the transformers undergoing repair. Approximately 55 gallons per year of waste transformer oils have been generated during the filtering process. From 1981 to the present, this oil has been placed in a 55-gallon drum and treated on-station at the Oily Waste Treatment Facility. Prior to 1981, the waste oil was spread along the fence line and used for weed control. Since 1979, the spent oil filter plates (two to three drums per year) have been disposed of in the on-station incinerator. Prior to 1979, these spent oil filter plates were landfilled on-station (sites 1, 2, 4, 5, and 6). The mercury vapor lamps (144 per year), 48-inch fluorescent light tubes (600 per six weeks), the U-shaped fluorescent light tubes (96 per six weeks), and the 60-watt and 100-watt light bulb (480 each per six months) have been placed in the dumpster for contract disposal in an off-station landfill since 1979. Prior to 1979, these wastes were landfilled on-station (sites 1, 2, 4, 5, and 6). The fluorescent light fixture ballasts have always been placed in a separate scrap metal bin and transported by PWD to the Defense Reutilization and Marketing Office (DRMO) for disposal. Waste cable generated during repairs has always been sent to DRMO for disposal.

The Electrical/Lineman/Air Conditioning-Refrigeration shops have used a total of one case per month of nonchlorinated Penetrating Blaster® for rust penetration. Since 1979, spent cans have been placed in the dumpster and transported along with other trash to the on-station incinerator where the nonburnable metals are separated and sent to DRMO for contract disposal. Prior to 1979, these spent cans were landfilled on-station (sites 1, 2, 4, 5, and 6). One gallon per year of 1,1,1-trichloroethane has been used by these shops for cleaning high-voltage cable. One case per month of HI-P Contact Cleaner® has been used for removing grease and dirt from a variety of small machine parts. These spent cans have been placed in the dumpster and transported to the on-station incinerator for disposal since 1979. Prior to 1979, the spent cans were landfilled on-station (sites 1, 2, 4, 5, and 6).

The Air Conditioning/Refrigeration Shop has generated six refrigeration filters per month used for moisture removal in refrigeration systems. The spent filters have always been placed in the dumpster and since 1979 disposed of in the on-station incinerator. Prior to 1979, these filters were disposed of in the on-station (sites 1, 2, 4, 5, and 6) landfill. The Air Conditioning/Refrigeration Shop has generated 25 disposable Freon® cylinders (50-pound) per month. Since 1980, these disposable cylinders have been transported to DRMO for disposal. Prior to 1980, refillable cylinders were used. These cylinders are currently stored in the Naval Supply Center. Fifty-five gallons per year of waste oil has been generated from compressor oil changes. Since 1981, this waste oil has been picked up by PWD and transported to the on-station Oily Waste Treatment Facility for treatment. Prior to 1981, this spent oil was landfilled on-station (sites 1, 2, 4, 5, and 6). Oily rags generated by the shop are placed in the dumpster for disposal in the on-station incinerator. Prior to 1979, the oily rags were landfilled on-station (sites 1, 2, 4, 5, and 6).

The shop also maintains the cooling towers stationwide. Tower blowdown, containing chlorine and algicide, enters the storm drain system and is discharged to the Mayport basin.

5.2.1.4 Plumbing/Pipefitting Shop. The Plumbing/Pipefitting Shop has always used two cases per year of nonchlorinated Penetrating Blaster® as a rust penetrant. Empty cans have been placed in the dumpster and disposed of in the on-station incinerator since 1979. Prior to 1979, these spent cans were landfilled on-station (sites 1, 2, 4, 5, and 6). Asbestos that is acquired during maintenance activities has been double-bagged in plastic bags and placed in a dumpster used for asbestos disposal only. This dumpster is emptied periodically and the asbestos is hauled by PWD off-station for disposal in a local landfill. Prior to 1981, all asbestos was landfilled on-station (sites 1, 2, 4, 5, and 6). Waste metal pipe has always been hauled to DRMO for contract disposal. Waste polyvinyl chloride (PVC) pipe has been placed in the dumpster and disposed of in the on-station incinerator. Twelve cases per year of ACTION® drain opener are used by the shop. The drain opener goes into the sewer system and eventually enters the sewage treatment plant.

5.2.1.5 Machine/Metal Trades Shop. The Machine/Metal Trades Shop provides small routine maintenance services at NAVSTA Mayport. No metalplating or galvanizing operations exist at this shop. Metal scraps have always been transported to DRMO for contract disposal. Since 1979, waste rags have been placed in the dumpster and disposed of in the on-station incinerator. Prior to 1979, all waste rags were landfilled on-station (sites 1, 2, 4, 5, and 6).

5.2.1.6 PWD Transportation Garage. The Transportation Garage has been located in Building 25 since 1942 and Building 234 since 1960. Both buildings were originally constructed to be garages. Transportation maintains all Navy-owned vehicles on-station. The number of vehicles serviced has increased as the number of station personnel has increased. Wastes generated by the Transportation Garage include engine oil, transmission fluid, hydraulic fluid, brake fluid, cleaning solvent, battery acid and casings, brake shoes, tires, floor cleaner, oil-laden rags and absorbent, and zinc metal tailings. The engine oil, transmission fluid, cleaning solvent, hydraulic fluid, and brake fluid have been placed in a waste oil bowser for disposal by the Naval Supply Center (NSC) Fuels Section since the mid-1950s. Prior to that time, the materials were drummed and placed in the active station landfill (Site 1) for disposal. Since 1962, batteries (containing lead and acid) and brake shoes have been returned to the local vendor for core credit. Prior to 1962, the batteries (containing lead and acid) and brake shoes were placed in the dumpster for disposal in the active station landfill (sites 1, 2, 4, and 5). Worn tires were disposed of in the active station landfill from 1942 to 1962 (sites 1 and 2). From 1962 to 1976, they were contract disposed of off-station by DRMO. Since 1976, tires have been returned to the vendor for credit. Floor cleaner has been rinsed into the lot since 1976. Lot runoff enters the storm drain system after passing through an oil-water separator. Oil-laden rags and absorbent have always been placed in the dumpster for disposal in the active station landfill (1942 to 1979) (sites 1, 2, 4, 5, and 6) or the station incinerator (1979 to 1985). Zinc metal is used when securing the cables used in the cranes stationwide. Molten zinc is poured into a mold surrounding the cable. Following cooling, the mold is trimmed. Scrap zinc generated has always been sent to DRMO for off-station contract disposal.

Table 5-2 summarizes the wastes generated by PWD-Transportation.

5.2.1.7 Boiler Plants. Two boiler plants at NAVSTA Mayport supply steam for the ships during berthing at the port. The boiler plant housed in Building 250 was constructed in 1962; the boiler plant housed in Building 1241 was constructed in 1970.

The two boilers located in Building 250 each have a design pressure of 200 pounds pounds per square inch and an operating pressure of 185 pounds per square inch. The blowdown from these boilers has always been discharged to the stormdrain, which empties into the Mayport basin. One

Table

Waste Generation from Public W[illegible]ansportation, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)* | WASTE MANAGEMENT PRACTICES (1940 – 1985) |
|---|---|---|---|---|
| PWD-TRANSPORTATION | 25 (1942 to present) 234 (1960 to present) | Engine Oil | 250 | Station Landfill (Sites 1,2 4) and Off-Station Contract Disposal |
| | | | 1,000 | Station Boilers and Off-Station Contract Disposal |
| | | | 1,600 | Station Incinerator |
| | | Transmission Fluid | 25 | Station Landfill (Sites 1,2 4) and Off-Station Contract Disposal |
| | | | 60 | Station Boilers and Off-Station Contract Disposal |
| | | | 100 | Station Incinerator |
| | | Hydraulic and Brake Fluid | 50 | Station Landfill (Sites 1,2 4) and Off-Station Contract Disposal |
| | | | 100 | Station Boilers and Off-Station Contract Disposal |
| | | | 200 | Station Incinerator |
| | | Cleaning Solvent | 25 | Station Landfill (Sites 1,2 4) and Off-Station Contract Disposal |
| | | | 60 | Station Boilers and Off-Station Contract Disposal |
| | | | 100 | Station Incinerator |
| | | Battery Acid and Casings | 200 | Station Landfill (Sites 1,2,4) |
| | | | 400 | Returned for Vendor Credit |
| | | Brake Shoes | 100 | Station Landfill (Sites 1,2,4) |
| | | | 300 | Returned for Vendor Credit |
| | | Tires | 200 | Station Landfill (Sites 1,2,4) |
| | | | 400 | DRMO for Off-Station Contract Disposal / Returned for Vendor Credit |
| | | Floor Cleaner | 150 | Storm Drain |
| | | Oil Laden Rags | variable | Station Landfill (Sites ,1,2,4,5,6) / Station Incinerator |
| | | Oil Absorbant | variable | Station Landfill (Sites ,1,2,4,5,6) / Station Incinerator |
| | | Zinc Metal | less than 5 pounds | DRMO for Off-Station Contract Disposal |

* All values in gallons per year unless otherwise noted.

[- - - -] Information estimated.

[_____] Information confirmed by station personnel.

pound per day of sodium phosphate and one pound per day of sodium sulfite has always been used to treat the boiler makeup water. The boilers have been acid cleaned with Chem-scale® (hydrochloric acid with scale inhibitor) every three to five years. This wash water was neutralized with trisodium phosphate and then discharged to the storm drain, which empties into the Mayport basin. Fireside cleaning of the boilers has been done every three to six months. The wastes generated included scrapers, brushes, soot, and slag. Water was not used in the cleaning process. All wastes were placed in the dumpster and hauled by PWD to the on-station landfill until its closure in 1985 (sites 2, 4, 5, and 6).

The three boilers located in Building 1241 each have a design pressure of 200 pounds per square inch and an operating pressure of 185 pounds per square inch. The wastes generated from fireside cleaning of the boilers every three to six months was handled in the same manner as wastes generated from the boiler plant housed in Building 250. The blowdown from these boilers has always been discharged to a lined neutralization pond (Site 11). From the neutralization pond, the boiler blowdown water has always been sent to the on-station sewage treatment plant. Five pounds per day of sodium phosphate and five pounds per day of sodium sulfite has always been used for treatment of the boiler makeup water. The boilers have been acid cleaned with Chem-scale® (hydrochloric acid with scale inhibitor) every three to five years. This wash water was neutralized with trisodium phosphate and then discharged to the neutralization pond. From the neutralization pond, the water was discharged to the on-station sewage treatment plant. The types and quantities of wastes produced by the boiler plants are summarized in Table 5-3.

5.2.1.8 Potable Water Treatment Plant. The existing potable water treatment plant located in and around Building 283 was constructed in 1961. Treatment of well water includes aeration for removal of hydrogen sulfide and chlorination, after which the water has been transferred to the 500,000-gallon aboveground storage tank adjacent to the potable water treatment plant. Between 1977 and 1978, the water was treated with hexametaphosphate and caustic soda for scale, pH, and corrosion control. However, this treatment was discontinued because mixture of these two chemicals caused the treatment system pipes to clog. Prior to 1961, the potable water treatment plant was located adjacent to buildings 9 and 47. Treatment consisted of aeration and chlorination.

5.2.1.9 Pest Control Shop. The Pest Control Division of PWD has always been responsible for storage and application of pesticides at the station. From 1942 to 1963, the Pesticide Shop was housed in a 10- by 30-foot trailer (referred to as Building 49) located at the west end of the Mayport basin. Between 1963 and 1964, the shop was moved to Building 484. After 1964, the shop was moved back to Building 49 and remained there until 1978. Since 1978, the shop has been located at Building 1433.

Table [illegible]

Waste Generation from Boiler Plants, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BOILER PLANTS | 250 | Blowdown | variable | | | | | Storm Drain to Mayport Basin | | | | | |
| | | Boiler Treatment Chemicals (Sodium Phosphate, Sodium Sulfite) | 1 pound per day | | | | | Storm Drain to Mayport Basin | | | | | |
| | | Boiler Cleaning Chemicals (HCl with Inhibitor Trisodium Phosphate) | variable | | | | | Storm Drain to Mayport Basin | | | | | |
| | | Fireside Cleaning Wastes (Slag, Soot, Brushes, Rags) | variable | | | | | Station Landfill | | | | | |
| | 1241 | Blowdown | variable | | | | | | | Onsite Neutralization Pond to STP | | | |
| | | Boiler Treatment Chemicals (Sodium Phosphate, Sodium Sulfite) | 5 pounds per day each chemical | | | | | | | Onsite Neutralization Pond to STP | | | |
| | | Boiler Cleaning Chemicals (HCl with Inhibitor Trisodium Phosphate) | variable | | | | | | | Onsite Neutralization Pond to STP | | | |
| | | Fireside Cleaning Wastes (Slag, Soot, Brushes, Rags) | variable | | | | | | | Station Landfill | | | |

* All values in gallons per year unless otherwise noted.

|_____| Information confirmed by station personnel.

It was standard practice to mix chemicals at the job site at volumes that would result in no excess and, therefore, no waste disposal. At Building 49, residue from application equipment was rinsed with a hydraulic sprayer, with runoff flowing into the Mayport basin. During the year that the shop was at Building 484, equipment rinseate ran onto nearby ground. Since 1978 (Building 1433), equipment has been rinsed on a pad that drains through a valve to the sanitary sewer system. The system was designed so that if concentrated chemicals inadvertently spilled onto the pad, the valve could be closed, the concentrate dipped out of a holding basin, and disposed of through DRMO.

Since approximately 1980, empty pesticide containers have been punctured and incinerated at the PWD incinerator. Prior to 1980, containers were punctured and flattened to prevent reuse and disposed of at station landfills (sites 1, 2, 4, 5, and 6).

A representative list of chemicals and quantities applied at the station since the 1960s is presented in Table 5-4. Five chemicals that were applied in 1968 continued to be used in 1985: malathion, diazinon, dalapon, chlordane, and anticoag. It should also be noted that some highly toxic and persistent pesticides including kepone, 2,4-D, chlordane, and dichlorodiphenyltrichloroethane (DDT) were used at NAVSTA Mayport. DDT is not listed in the historical records, but was used on the station in the earlier time periods.

5.2.2 Naval Air Facility. Three helicopter squadrons are currently assigned to NAVSTA Mayport. Squadron HSL-36 flies the Lamps Mark III helicopter and Squadrons HSL-40 and HSL-42 fly the Lamps Mark IV helicopter. The squadrons fly antisubmarine patrol and search-and-rescue (SAR) missions. Squadron maintenance personnel perform preventative maintenance and minor repair on the aircraft in each squadron. Squadron HSL 36 has been housed in Building 1343 since being assigned to NAVSTA Mayport in 1975. Squadron HSL-40 has also been housed in Building 1343 since being assigned in 1985. HSL-40 currently operates only one helicopter, and wastes generated by its maintenance are combined with the wastes generated by Squadron HSL-42. Squadron HSL-42 has been housed in Building 1338 since being assigned to the Station in 1984.

5.2.2.1 Squadron HSL-36. Squadron HSL-36, assigned to NAVSTA Mayport in 1975, performs minor maintenance on the Lamps Mark III helicopter. Wastes generated by the squadron include engine oil, hydraulic fluid, PD-680, Freon®, polyurethane paint sludges and thinners, aircraft cleaning compound, glass cleaner, oil-laden rags, and JP-5 aircraft fuel. The oil and hydraulic fluid are drummed and taken to the NAVSTAC fuel farm for disposal in the Oily Waste Treatment Facility. The waste fuel is drummed separately and disposed of in the same manner. The PD-680, Freon®, and paint sludges and thinners have been drummed separately and contract disposed off-station as hazardous waste since 1982. Prior to 1982, these wastes were combined with the waste oil. The aircraft cleaning compound has always been rinsed from the aircraft on the wash

Table 5-4

Types and Approximate Quantities (Monthly Average) of Pesticides/Herbicides Applied Since 1969 at Naval Station Mayport, Florida

| 1968 to 1969 | | 1970 to 1974 | | 1975 to 1979 | | 1980 to 1985 | |
|---|---|---|---|---|---|---|---|
| Compound | Volume Per Month | Compound | Volume Per Month | Compound | Volume Per Month | Compound | Volume Per Month |
| Malathion | 1,600 lb | Malathion | 1,600 lb* | Malathion | 2,600 lb | Malathion | 50 lb |
| Diazinon | 450 gal | Diazinon | 50 gal† | Diazinon | 160 gal | Diazinon | 60 gal |
| Dalapon | 260 gal | Dalapon | 430 gal | Dalapon | 200 gal | Dalapon | 2,300 gal |
| Chlordane | 60 gal | Chlordane | 80 gal | Chlordane | 130 gal | Chlordane | 10 gal |
| Anticoag | 10 lb | Anticoag | 10 lb | Anticoag | 4 lb | Anticoag | 20 lb |
| Heptachlor | 30 gal | Heptachlor | 20 gal | Aldrin | 40 gal | Dursban | 170 lb |
| OPL (#2) | 450 gal | Kepone | 60 gal | Kepone | 20 gal | Ficam W | <1 lb |
| Parisgreen | 100 lb | 2,4-D | 160 gal | 2,4-D | 630 gal | 2,4-D | 580 gal |
| Sarolex | 20 gal | Minoils | 50 gal | Minoils | 1,600 gal | Minoils | 2,200 gal |
| | | Manzate-D | 270 gal | HYVOR (Bromacil) | 500 gal | HYVOR (Bromacil) | 880 gal |
| | | Herb-a-turf | 260 gal | Herb-a-turb | 730 gal | Herb-a-turf | 350 gal |
| | | Mirex | 90 gal | Dursban | 270 lb | Diuron | 300 lb |
| | | Sevin | 60 gal | Manzate | 290 gal | Milpro 60 | 117 gal |
| | | Diuron | 50 gal | Naled | 280 gal | Tersan-75 | 70 gal |
| | | Krovar I | 330 gal | Krovar I | 130 gal | Pyrenone | 20 gal |
| | | Hibor C | 50 gal | Organo Phos | 130 gal | D Chlorvas | 20 lb |
| | | Ansar-170 HC | 20 lb | Carbaryl | 125 lb | Kerb 50-W | 20 gal |
| | | Dursban | 10 lb | Baygon | 60 gal | Ronnel | 7 lb |
| | | Monobar-Chlorate | 10 gal | Hibor C | 50 gal | Knoxout 2 | 6 gal |
| | | D Chlorvas | 10 lb | MCB | 50 gal | Baygon | 3 gal |
| | | Baygon | 10 gal | Aldrite | 40 gal | | |
| | | Para-Blox | 3 lb | Dylox | 33 gal | | |
| | | Vapona | <1 lb | Sevin | 20 gal | | |
| | | Ronnel | <1 lb | Kerb 50-N | 20 gal | | |
| | | | | Velpar | 20 gal | | |
| | | | | D Chlorvas | 10 lb | | |
| | | | | Balan | 10 lb | | |
| | | | | Mirex | 2 lb | | |
| | | | | Pyrenone | 2 gal | | |
| | | | | Extra ban | 2 gal | | |
| | | | | Dibron | <1 lb | | |

*lb = pounds.
†gal = gallons.

rack. The rinse water passes through an oil-water separator and enters the storm sewer system. The oil-laden rags have been placed in a dumpster for disposal in the station incinerator since 1979. Prior to 1979, the rags were disposed of in the active station landfill (sites 2, 5, and 6). The glass cleaner evaporates from the glass surface during use. Wastes generaated by HSL-36 are summarized in Table 5-5.

5.2.2.2 Squadron HSL-40. Squadron HSL-40 was assigned to NAVSTA Mayport in early 1985 and at the time of the site visit had only one LAMPS Mark IV helicopter. The helicopter had been serviced one time and the wastes generated combined with the wastes of Squadron HSL-42.

5.2.2.3 Squadron HSL-42. Squadron HSL-42, assigned to NAVSTA Mayport in 1984, performs minor maintenance and repair on the LAMPS Mark IV helicopter. Wastes generated by the squadron include engine oil, hydraulic fluid, PD-680, JP-5 fuel, polyurethane paint sludges and thinners, cleaning solvents (1,1,1-trichloroethane, acetone, and Freon®), and aircraft cleaning compound. The engine oil, fuel, hydraulic fluid, and PD-680 have been drummed separately and taken to the Oily Waste Treatment Facility since 1984. The polyurethane paint sludges and thinners and the cleaning solvents have also been drummed and contract disposed off-station as hazardous waste since 1984. The aircraft cleaning compound has always entered the storm sewer system by way of the wash rack drain and an oil-water separator. Wastes generated by HSL-42 are summarized in Table 5-6.

5.2.2.4 Aircraft Intermediate Maintenance Divison. An Aircraft Intermediate Maintenance Division (AIMD) facility is currently being constructed at the Naval Air Facility for intermediate-level helicopter maintenace and repair. The facility will not begin operations until late 1985 and had not generated any wastes at the time of the station visit.

5.2.2.5 Ground Support Equipment. Prior to July 1985, any aircraft Ground Support Equipment (GSE) requiring maintenance was transported to Naval Air Station Jacksonville for servicing. All wastes generated were combined with the wastes generated by Naval Air Station Jacksonville.

5.2.3 Ship Operations.

5.2.3.1 Harbor Operations/Pier Operations. Harbor Operations provides tugboats for ship and barge movement at NAVSTA Mayport. Tugs are used to guide and spot ships at the piers. The fuel, waste oil donuts, and waste oil barges are placed alongside the ships, when necessary, by the tugs. Wastes generated by Harbor Operations include lube oil and paint sludges and thinners. Lube oils and paint sludges and thinners have always been placed into the tugs' bilges and pumped to the Oily Waste Treatment Facility. Sanitary wastes are transferred to the sewage treatment plant once the tug returns to the pier.

Table [illegible]

Waste Generation from Squadron HSL-36, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/ year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSL-36 | 1343 | Engine Oil | 400 | | | | | | | | Off-Station Contract Disposal | Station Incinerator | |
| | | Hydraulic Fluid | 250 | | | | | | | | Off-Station Contract Disposal | Station Incinerator | |
| | | Cleaning Solvent (PD-680) | 180 | | | | | | | | Off-Station Contract Disposal | | |
| | | Trichlorotrifluoro-ethane (Freon) | 180 | | | | | | | | Off-Station Contract Disposal | | |
| | | Polyurethane Paint Sludges and Thinners | 50 | | | | | | | | Off-Station Contract Disposal | | |
| | | Aircraft Cleaning Compound | 450 | | | | | | | | Wash Rack to Storm Drain | | |
| | | Glass Cleaner | 40 | | | | | | | | Evaporated in Use | | |
| | | Oil Laden Rags | variable | | | | | | | | Station Landfill | Station Incinerator | |
| | | Fuel | variable | | | | | | | | Off-Station Contract Disposal | Station Incinerator | |

* All values in gallons per year unless otherwise noted.

[ ] Information confirmed by station personnel.

Table 5-6
Waste Generation from Squadron HSL-42, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | Station Incinerator [__] |
| HSL-42 | 1338 | Engine Oil | 220 | | | | | | | | | | Station Incinerator [__] |
| | | Hydraulic Fluid | 110 | | | | | | | | | | Station Incinerator [__] |
| | | PD-680 | less than 55 | | | | | | | | | | Station Incinerator [__] |
| | | Fuel | 660 | | | | | | | | | | Off-Station Contract Disposal [__] |
| | | Polyurethane Paint Sludges and Thinners | less than 55 | | | | | | | | | | Off-Station Contract Disposal [__] |
| | | Cleaning Solvents (1,1,1-Trichloroethane, Acetone and Trichloro-trifluoroethane) | 55 | | | | | | | | | | Wash Rack to Storm Drain [__] |
| | | Aircraft Cleaning Compound | 60 | | | | | | | | | | |

* All values in gallons per year unless otherwise noted.

[__] Information Confirmed by Station Personnel

Pier Operations provides equipment and manpower for disposing of containerized wastes generated on-ship. The wastes are unloaded on the piers and then picked up and transferred to the appropriate disposal facility. Waste materials handled consist primarily of waste paints, thinners, solvents (chlorinated and nonchlorinated), and lube oils. The waste paints, thinners, and solvents were placed in the active station landfill until 1982 (sites 1, 2, 4, 5, and 6). Since 1982, these wastes have been contract disposed off-station. Containerized lube oils were also placed into the station landfill (sites 1, 2, 4, 5, and 6) until approximately 1970. Since that time, all wastes have been discharged to the Oily Waste Treatment Facility.

Wastes generated by Harbor Operations/Pier Operations are detailed in Table 5-7.

5.2.3.2 Shore Intermediate Maintenance Activity. Shore Intermediate Maintenance Activity (SIMA) provides manpower and facilities for all intermediate-level ship repairs, up to the level that would require drydocking and/or major overhaul. SIMA was located in and around Building 46 from 1971 to 1981. In 1981, SIMA moved to Building 1488. SIMA operations were expanded following the transfer to Building 1488.

Wastes generated by SIMA include primarily lube oil, hydraulic fluid, solvents (hazardous and nonhazardous), paints and thinners, plating solutions, acids, and photographic solutions. Lube oils and hydraulic fluids have always been discharged to the Oily Waste Treatment Facility for off-station contract disposal and burning in the station boilers and incinerator. Paints, thinners, and solvents were included with the waste oil until 1981. Since 1981, these wastes have been picked up by PWD for off-station contract disposal as hazardous waste. Acids and plating solutions were discharged to the sanitary sewer until 1981. Since that time, these wastes have also been contract disposed of off-station as hazardous waste. Photographic solutions have always been discharged to the sanitary sewer. Scrap metal generated is segregated according to metal type and contract disposed off-station through DRMO.

Wastes generated by SIMA are summarized in Table 5-8.

5.2.3.3 Destroyer Tenders. The USS Yosemite, a destroyer tender, has been assigned to NAVSTA Mayport since 1969. Operations onboard the USS Yosemite closely parallel the SIMA operations. The USS Yosemite has the capability of performing all intermediate-level ship repairs while anchored at a remote location. While docked at NAVSTA Mayport, repairs to the incoming ships are divided between SIMA and the USS Yosemite. Specific waste types and quantities were not available for security reasons, but are expected to be of the same types and one-half the quantities of those generated by SIMA. Lube oils and hydraulic fluids generated have been discharged directly to the Oily Waste Treatment Facility since 1977. Waste paints, thinners, and solvents were included with the waste oil until 1981. Since 1981, these wastes have been

Table 5-7

Waste Generation from Harbor Operations/Bosun's Locker, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HARBOR OPERATIONS | 1252 | Lube Oils | 1,800 | Discharged to Oily Waste Treatment Facility | | | | | | | | | |
| | | Bilge Water | variable | Discharged to Oily Waste Treatment Facility | | | | | | | | | |
| | | Paint Sludges and Thinners | 50 | Station Landfill | | | | | | | | | Off-Station Contract Disposal |
| PIER OPERATIONS | 183 | Paint Sludges and Thinners | 5000 | Station Landfill | | | | | | | | | Off-Station Contract Disposal |
| | | Solvents | 1,000 | Station Landfill | | | | Discharged to Oily Waste Treatment Facility | | | | | |
| | | Lube Oils | 2,000 | | | | | | | | | | |

* All values in gallons per year unless otherwise noted.

|_ _ _ _ _ _ _| Information estimated.

|_____| Information confirmed by station personnel.

Table 5-8
Waste Generation from Shore Intermediate Maintenance Activity (SIMA), Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/ year)* | WASTE MANAGEMENT PRACTICES 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 |
|---|---|---|---|---|
| SHORE INTERMEDIATE MAINTENANCE ACTIVITY | | | | |
| DIVISION 17A FOUNDRY | 46 (1971 to 1981) 1488 (1981 to present) | Acetone | 60 | Off-Station Contract Disposal |
| | | Corrosion Remover | 48 | Off-Station Contract Disposal |
| DIVISION 44A CARPENTRY SHOP | | Methyl Ethyl Ketone (MEK) | 20 | Off-Station Contract Disposal |
| | | Paint Sludges and Thinners | 100 | Off-Station Contract Disposal |
| DIVISION 81A FOUNDRY | | Hydrochloric Acid | 50 | Off-Station Contract Disposal |
| | | Ammonium Chloride | 20 | Off-Station Contract Disposal |
| | | Isopropyl Alcohol | 50 | Off-Station Contract Disposal |
| | | Trichloroethylene | 20 | Off-Station Contract Disposal |
| | | Bentonite | 20 | Off-Station Contract Disposal |
| DIVISION 06A/25C TRANSPORTATION SHOP | | Waste Paint | 25 | Off-Station Contract Disposal |
| | | Methyl Ethyl Ketone (MEK) | 25 | Off-Station Contract Disposal |
| | | Ethylene Glycol | 55 | Sanitary Sewer; Off-Station Contract Disposal |
| | | Hydraulic Fluid | 10 | Off-Station Contract Disposal |
| | | Tetrachloroethylene | 50 | Off-Station Contract Disposal |

Table 5-8
Waste Generation from Shore Intermediate Maintenance Activity (SIMA), Naval Station Mayport, Florida (continued)

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/ year)[a] | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIVISION 31A INSIDE MACHINE SHOP | | Cleaning Solution | 50 | | | | | | | | Sanitary Sewer | | Contract Disposal |
| | | Etching Solution | 50 | | | | | | | | Sanitary Sewer | | Off-Station Contract Disposal |
| | | Copper Plating Solution | 10 | | | | | | | | Sanitary Sewer | | Off-Station Contract Disposal |
| | | Nickel Plating Solution | 10 | | | | | | | | Sanitary Sewer | | Off-Station Contract Disposal |
| | | Silver Plating Solution | 15 | | | | | | | | Sanitary Sewer | | Off-Station Contract Disposal |
| | | Marking Dye | 5 | | | | | | | | Sanitary Sewer | | |
| DIVISION 31B/64E ENGRAVE AND KEY/LOCK SHOP | | Developer | 10 | | | | | | | | Sanitary Sewer | | |
| | | Fixer | 10 | | | | | | | | Off-Station Contract Disposal | | |
| DIVISION 31C/31E ENGINE SHOP | | Test Fluid | 55 | | | | | | | | Off-Station Contract Disposal | | |
| | | PD-680 | 15 | | | | | | | | Off-Station Contract Disposal | | |
| | | Wildcat Degreaser | 110 | | | | | | | | Off-Station Contract Disposal | | |
| | | Varnish | 10 | | | | | | | | Off-Station Contract Disposal | | |
| | | Paint | 10 | | | | | | | | Off-Station Contract Disposal | | |
| | | Lube Oil | 10 | | | | | | | | Off-Station Contract Disposal | | |
| | | Hydraulic Fluid | 10 | | | | | | | | Off-Station Contract Disposal | | |
| | | Muriatic Acid | 110 | | | | | | | | Sanitary Sewer | | Off-Station Contract Disposal |

Table 5-8
Waste Generation from Shore Intermediate Maintenance Activity (SIMA), Naval Station Mayport, Florida (continued)

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/ year)* | WASTE MANAGEMENT PRACTICES 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 |
|---|---|---|---|---|
| DIVISION 31D VALVE SHOP | | 1,1,1-Trichloroethane | 50 | (Sites 2,5,6) Contract Disposal |
| | | Paint | 100 | Station Landfill (Sites 2,5,6) Off-Station Contract Disposal |
| | | Adhesive | 20 | Station Landfill (Sites 2,5,6) Off-Station Contract Disposal |
| | | Sand Blast Grit | 200 pounds per year | Station Landfill (Sites 2,5,6) Off-Station Contract Disposal |
| | | Boiler Test Chemicals | 25 | Sanitary Sewer Off-Station Contract Disposal |
| | | Isopropyl Alcohol | 25 | Sanitary Sewer Off-Station Contract Disposal |
| | | Mercuric Nitrate | 110 | Sanitary Sewer Off-Station Contract Disposal |
| DIVISION 31F/56C HYDRAULIC SHOP | | Hydraulic Fluid | 10 | Station Boilers and Off-Station Contract Disposal Station Boilers and Incinerator |
| | | Lube Oil | 10 | Station Boilers and Off-Station Contract Disposal Station Boilers and Incinerator |
| DIVISION 31G PUMP SHOP | | Degreaser | 300 | Station Boilers and Off-Station Contract Disposal Off-Station Contract Disposal |
| | | Primer | 50 | Station Landfill (Sites 2,5,6) Off-Station Contract Disposal |
| DIVISION 38A OUTSIDE MACHINE SHOP | | Methyl Ethyl Ketone (MEK) | 10 | Station Boilers and Off-Station Contract Disposal Off-Station Contract Disposal |
| | | Asbestos | 25 pounds per year | Station Landfill (Sites 2,5,6) Off-Station Contract Disposal |
| DIVISION 56R A/C SHOP | | FD-680 | 110 | Station Boilers and Off-Station Contract Disposal Off-Station Contract Disposal |
| | | Trichlorotrifluoroethane | 110 | Station Boilers and Off-Station Contract Disposal Off-Station Contract Disposal |
| | | | | Station Landfill (Sites 2,5,6) Off-Station Contract Disposal |

Table 5-8
Waste Generation from Shore Intermediate Maintenance Activity (SIMA), Naval Station Mayport, Florida (continued)

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year) | WASTE MANAGEMENT PRACTICES: 1940 – 1945 – 1950 – 1955 – 1960 – 1965 – 1970 – 1975 – 1980 – 1985 |
|---|---|---|---|---|
| DIVISION 41A/41B BOILER REPAIR SHOP | | Adhesive | 10 | Station Landfill (Sites 2,5,6) → Off-Station Contract Disposal |
| | | Trichlorotrifluoroethane | 60 | Station Boilers and Off-Station Contract Disposal → Off-Station Contract Disposal |
| | | | | Station Boilers and Off-Station Contract Disposal → Off-Station Contract Disposal |

Table 5-6
Waste Generation from Shore Intermediate Maintenance Activity (SIMA), Naval Station Mayport, Florida (continued)

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year) | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Station Landfill (Sites 2,5,6) | | Off-Station Contract Disposal |
| DIVISION 51F GYRO SHOP | | Silicone Damping Fluid | 50 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Station Boilers and Incinerator |
| DIVISION 51G INTERIOR COMM SHOP | | Lube Oil | 100 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| | | Alcohol | 10 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| | | Trichloroethane | 10 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Station Boilers and Incinerator |
| DIVISION 67A OUTSIDE ELECTRONIC REPAIR SHOP | | Lube Oil | 100 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| | | PD-680 | 10 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| | | Alcohol | 10 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| | | Trichloroethane | 25 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| | | Xylene | 5 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| | | Acetone | 10 | | | | | | | | | | |
| | | | | | | | | | | | Station Landfill (Sites 2,5,6) | | Off-Station Contract Disposal |
| | | Paint | 10 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| DIVISION 96A NIACS SHOP | | Freon | 10 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| | | Acetone | 10 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| | | Trichloroethane | 10 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| | | Alcohol | 25 | | | | | | | | | | |
| | | | | | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal |
| DIVISION 38B ORDNANCE SHOP | | PD-680 | 20 | | | | | | | | | | |
| | | | | | | | | | | | Station Landfill (Sites 2,5,6) | | Off-Station Contract Disposal |
| | | Paint | 25 | | | | | | | | | | |
| | | | | | | | | | | | Station Landfill (Sites 2,5,6) | | Off-Station Contract Disposal |
| DIVISION 71A SANDBLAST SHOP | | Paint Sludges and Thinners | 80 | | | | | | | | | | |

Table 5-8
Waste Generation from Shore Intermediate Maintenance Activity (SIMA), Naval Station Mayport, Florida (continued)

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIVISION 72A/D RIGGERS SHOP | | Alcohol | 5 | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal | |
| | | Tolulene | 5 | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal | |
| | | PD-680 | 10 | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal | |
| | | Lube Oil | 10 | | | | | | | Station Boilers and Off-Station Contract Disposal | | Station Boilers and Incinerator | |
| DIVISION 11A SHIPFITTER SHOP | | Hydraulic Fluid | 5 | | | | | | | Station Boilers and Off-Station Contract Disposal | | Station Boilers and Incinerator | |
| | | Varnish | 5 | | | | | | | Station Landfill (Sites 2,5,6) | | Off-Station Contract Disposal | |
| | | Paint | 5 | | | | | | | Station Landfill (Sites 2,5,6) | | Off-Station Contract Disposal | |
| | | Developer | 5 | | | | | | | Sanitary Sewer (Sites 2,5,6) | | | |
| DIVISION 95A OIL LABORATORY | | Tolutene | 50 | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal | |
| | | Alcohol | 50 | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal | |
| | | Naptha | 20 | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal | |
| | | Trichlorcethane | 1 | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal | |
| DIVISION 93A NON-DESTRUCTIVE TEST (NDT) LABORATORY | | Acetone | 10 | | | | | | | Station Boilers and Off-Station Contract Disposal | | Off-Station Contract Disposal | |
| | | Penetrants and Dyes | 1 | | | | | | | Sanitary Sewer (Sites 2,5,6) | | | |
| | | Developer | 5 | | | | | | | Sanitary Sewer (Sites 2,5,6) | | | |
| | | Fixer | 5 | | | | | | | Sanitary Sewer (Sites 2,5,6) | | | |

* All values in gallons per year unless otherwise noted.

:_____: Information estimated.

:_____: Information confirmed by station personnel.

transferred to PWD for off-station contract disposal as hazardous waste. Sanitary sewage is discharged directly into the station sanitary sewage system.

The USS Yellowstone was the destroyer tender assigned to NAVSTA Mayport between 1960 and 1969. Waste paints, thinners, and solvents generated by industrial operations were disposed of with waste oils or went to the station landfills (sites 1, 2, 4, 5, and 6). The quantities of wastes generated by the USS Yellowstone are estimated to be approximately the same as the USS Yosemite.

The only other tender located at NAVSTA Mayport was the USS Everglades. The USS Everglades was assigned from September 1959 to December 1959. Wastes generated by repair activities were disposed of with the waste oils or sent to the station landfill (site 1).

5.2.3.4 Shipboard Waste Generation. Wastes generated onboard ship have always been disposed of in two ways: (1) overboard jettison, or (2) removal while in port. Since 1981, ship bilges, gray water, garbage, and sanitary wastes may not be discharged overboard while the ship is inside the 30-mile international limit. These wastes have been stored in tanks until the ship is berthed and connected to shoreside facilities. Waste quantities given for the various treatment facilities at NAVSTA Mayport (sewage treatment plant and Oily Waste Treatment Facility) reflect the wastes generated by the home-ported ships.

Hazardous waste generation varies significantly between ship types and between ships of the same type. Table 5-9 contains the estimated average monthly waste generation rates for the types of ships home-ported at NAVSTA Mayport. Since the enactment of the hazardous waste regulations in 1979, these wastes have been containerized following use and transferred to the station hazardous waste coordinator upon docking. The station hazardous waste coordinator then segregates the wastes and disposes of them through DRMO. Prior to 1979, these wastes were included in the ship bilges or waste oil, and, in the case of NAVSTA Mayport, were disposed of in the station landfills (sites 1, 2, 4, 5, and 6).

5.2.4 Tenants.

5.2.4.1 Naval Exchange (NEX) Service Station. The NEX Service Station provides gasoline and fluids and performs minor maintenance for privately owned vehicles on NAVSTA Mayport. The station has been located at Building 265 since 1962. Prior to 1962, the facility was located adjacent to Building 33. The station has three 10,000-gallon fiberglass gasoline tanks. Oil changes and light maintenance are performed in the service bay. All oils and fluids are disposed of in a 100-gallon underground storage tank. The tank contents have always been removed by an off-station waste oil company. Diesel fuel used for parts cleaning is disposed of in a sink connected to the underground storage tank. Battery casings (unemptied) and brake shoes have always been returned to the

Table 5-9

Shipboard Industrial and Chemical Waste Generation Rates,
Naval Station Mayport, Florida

| Waste Product | Carriers | Combatants* | Tenders |
|---|---|---|---|
| Chlorinated solvents | 300 gal† | 50 gal | 90 gal |
| Nonchlorinated solvents | 770 gal | 100 gal | 280 gal |
| Photo and x-ray processing waste | 1,300 gal | 40 gal | 440 gal |
| Mercury | 5 lb** | — | 2 lb |
| Spent acid from acid cleaning | 320 gal | 50 gal | 110 gal |
| Metal plating solutions | 210 gal | 1 gal | 60 gal |
| Water with corrosion inhibitors (sodium chromate, ethylene glycol, sodium silicate) | Bulk quantities | Bulk quantities | Bulk quantities |
| Oils, hydraulic and other | 310 gal | 100 gal | 130 gal |
| Synthetic hydraulic fluid | 1,000 gal | 10 gal | 100 gal |
| Fire fighting foam (AFFF) | Bulk quantities | Bulk quantities | Bulk quantities |
| Components containing PCB (capacitors and coils) | 100 lb | 5 lb | 10 lb |
| Batteries | 1,400 lb | 50 lb | 460 lb |
| Boiler boil out solution (phosphate) | 200 gal | 50 gal | 100 gal |
| Boiler passivating solution (nitrite) | 200 gal | 50 gal | 100 gal |
| Boiler water test chemical | 20 gal | 10 gal | 10 gal |

*Ship types in this category at NAVSTA Mayport include destroyers, guided missile destroyers, frigates, guided missile frigates, and guided missile cruisers.
†gal = gallons.
**lb = pounds.

Note: Figures given are estimated average monthly rates and are presented for general information. Specific ship generation rates may vary significantly from average values.

Source: SESO, 1983.

vendor for core credit. Cleanup rags have always been stored in a metal safety can and picked up weekly by an off-station linen service. Small oil spills are cleaned up with Durasorb® absorbent, which is then placed in the dumpster for disposal in the station incinerator. Prior to 1975, these absorbents went to the station landfill (sites 1, 2, 4, 5, and 6). Two cleanup sinks are connected to a pipe that drains into the storm drain system. Small battery acid spills (that may occur when filling batteries that have been delivered dry by the vendor) also drain through this floor drain. Types and quantities of wastes produced by the NEX Service Station are summarized in Table 5-10.

5.2.4.2 Auto Hobby Shop. The Auto Hobby Shop provides the space and equipment for station personnel and their dependents to maintain private vehicles. Retired station personnel also use this facility. The Auto Hobby Shop has always been located in Building 414, which was constructed in 1959. Wastes generated included engine oil, spent battery acid and casings, transmission and brake fluids, brake linings (which may contain asbestos), oil-based COLD® parts cleaner, and oily rags. One-hundred gallons per week of waste engine oil and fluids is generated. These wastes are placed in 55-gallon drums and are periodically pumped out by the NSC Fuels Section for treatment at the on-station Oily Waste Treatment Facility. One spent battery per month (including casing and acid) has been placed in the trash dumpster for disposal. Prior to 1979, the battery casings and acid were landfilled on-station (sites 1, 2, 4, 5, and 6). Since September 1985, approximately 25 sets of brake shoes per week (which may have contained asbestos) have been placed in plastic-lined drums and picked up by PWD for off-station contract disposal. Between 1979 and September 1985, all brake shoes were placed in the dumpster for disposal. Prior to 1979, the brake shoes were placed in the dumpster and landfilled on-station (sites 1, 2, 4, 5, and 6). Ten gallons every six weeks of oil-based parts cleaner has been placed in the waste oil drums. Since 1979, oily rags have been placed in the dumpster for disposal in the on-station incinerator. Prior to 1979, the oily rags were landfilled on-station (sites 2, 4, 5, and 6). Types and quantities of wastes produced by the Auto Hobby Shop are summarized in Table 5-11.

5.2.4.3 Jacksonville Shipyards, Inc. Jacksonville Shipyards has provided logistic support for assigned ships and service craft, including conversion, overhaul, repair, alteration, and outfitting at NAVSTA Mayport since 1962. Wastes generated by Jacksonville Shipyards include asbestos, waste oil, epoxy and enamel paints, degreasers, mineral spirits, Kodak® developer and fixer, and sandblast grit.

Since 1980, asbestos generated has been doubled-bagged and placed in a dumpster used for asbestos disposal only. Mayport PWD has periodically picked up the asbestos for contract disposal in an off-station landfill. Prior to 1980, asbestos was disposed of in the on-station landfill (sites 5 and 6). Approximately 14,000 gallons per year of waste oil generated by compressor, turbine, and motor repair and change-out has been collected in 55-gallon drums at locations around the specific work

Table 5-10
Waste Generation from MEX Service Station, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEX SERVICE STATION | 265 (1962 to present) | Engine Oil, Transmission and Brake Fluids, Diesel Fuel | 960 | | | | | Off-Station Contract Disposal | | | | | |
| | | Batteries | 150 | | | | | Returned for Vendor Credit | | | | | |
| | | Brake Shoes | 120 | | | | | Returned for Vendor Credit | | | | | |
| | | Absorbent | variable | | | | | Station Landfill | | | | Station Incinerator | |
| | | Oily Rags | variable | | | | | Off-Station Linen Service | | | | | |

* All values in gallons per year unless otherwise noted.

| | Information confirmed by station personnel.

Waste Generation from Auto Hobby Shop, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)* | 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | WASTE MANAGEMENT PRACTICES | | | | | | | | | |
| AUTO HOBBY SHOP | 414 | Engine Oil, Transmission and Brake Fluids | 5,200 | | | | | Station Landfill | | | | Station Incinerator | |
| | | Battery Casings with Battery Acid | 12 per month | | | | | Station Landfill | | | | Station Incinerator | |
| | | Brake Linings | 25 per week | | | | | Station Landfill | | | | Station Incinerator | |
| | | Oil Based Cold Parts Cleaner | 87 | | | | | Station Landfill | | | | Station Incinerator | |
| | | Oily Rags | variable | | | | | Station Landfill | | | | Station Incinerator | |

* All values in gallons per year unless otherwise noted.

| | Information confirmed by station personnel.

area. Since 1978, 55-gallon drums of waste oil have been pumped out by a subcontractor to an on-station, 7,000-gallon oil storage tank and then discharged to the Oily Waste Treatment Facility. Prior to 1978, these drums of waste oil were disposed of in the on-station landfill (sites 2, 5, and 6). Quantities of waste paints generated in the past have varied according to the work load. Waste paints have always been placed in the dumpster. Prior to 1980, the waste paints were disposed of in the on-station landfill (sites 2, 5, and 6). Since 1980, the waste paints have been picked up by a subcontractor for disposal in an off-station landfill. Twelve 55-gallon drums per year of waste mineral spirits has been generated and disposed of on the ground or placed in the dumpster. Prior to 1980, the mineral spirits placed in the dumpster were disposed of in the on-station landfill (sites 1, 2, 4, 5, and 6). Since 1980, the mineral spirits have been landfilled off-station. One-hundred gallons per year of Kodak® fixer and developer has been poured down the sink. The sink discharges to the on-station sewage treatment plant. One-hundred fifty tons per year of sandblast grit has been used for sandblasting. The sandblast grit has always been landfilled off-station.

Jacksonville Shipyards has used approximately 220 gallons per year of Brulin® solvent degreaser which contains perchloroethylene and methylene chloride. Six-hundred sixty gallons per year of Napa Cold Wash No. 6550® has been used in parts cleaning operations. These wastes have been placed in 55-gallon drums located around the specific work areas. Since 1980, the 55-gallon drums of wastes were emptied into dumpsters for disposal in an off-station landfill. Prior to 1980, the wastes were disposed of in the on-station landfill (sites 2, 5, and 6).

Seventy gallons per year of liquid flux dyes and 200 gallons per year of cutting oil have been used in sheet metal operations. Approximately 50 cases per year of Magnaflux® developer containing methylene chloride has been used in sheet metal operations for cleaning purposes. Fifty cases per year of Magnaflux® dye used to locate fractures in sheet metal has also been used. Wastes associated with these degreasers, dyes, and developers included rags, brushes, stirrers, and empty cans. These wastes have been placed in 55-gallon drums located around the specific work areas. Since 1980, the 55-gallon drums of wastes were emptied into dumpsters for disposal in an off-station landfill. Prior to 1980, the wastes were disposed of in the on-station landfill (sites 2, 5, and 6).

Jacksonville Shipyards has generated various amounts of paper waste, woodscraps, and metal scraps depending on work loads during logistic support operations. Prior to 1982, wood scraps and paper wastes were disposed of in the on-station landfill (sites 2, 5, and 6). Since 1982, these wastes have been hauled by Jacksonville Shipyards to an off-station landfill. Metal scraps have always been turned in to DRMO. Bilge water is discharged to the Oily Waste Treatment Facility. Wastes generated by Jacksonville Shipyards are summarized in Table 5-12.

Table 5-12
Waste Generation from Jacksonville Shipyard , Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/ year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JACKSONVILLE SHIPYARD | | Engine Oil | 14,000 | | | | | | | On Station Landfill | | DWTF | |
| | | Asbestos | Variable | | | | | | | | | Off-Station Contract Disposal | |
| | | Paint | Variable | | | | | | | On Station Landfill | | Off-Station Contract Disposal | |
| | | Mineral Spirits | 660 | | | | | | | On Station Landfill | | Off-Station Contract Disposal | |
| | | Kodak Fixer and Developer | 100 | | | | | | | Sanitary Sewer | | | |
| | | Sandblast Grit | 100 tons per year | | | | | | | Off-Station Contract Disposal | | | |
| | | Brulin® Solvent | 220 | | | | | | | On Station Landfill | | Off-Station Contract Disposal | |
| | | NAPA Cold Wash No.6550 | | | | | | | | On Station Landfill | | Off-Station Contract Disposal | |
| | | Rags,Brushes,etc. saturated with flux dyes and oils | Variable | | | | | | | On Station Landfill | | Off-Station Contract Disposal | |
| | | Paper and Wood Scraps | Variable | | | | | | | On Station Landfill | | Off-Station Contract Disposal | |
| | | Metal Scraps | Variable | | | | | | | DRMO | | | |

* All values in gallons per year unless otherwise noted.

[information confirmed by station personnel]

5.2.4.4 Atlantic Marine, Inc. Atlantic Marine has provided logistic support for assigned ships and service craft, including conversion, overhaul repair, alteration, and outfitting at NAVSTA Mayport since 1965. Waste oil that has been generated during bilge pumping or maintenance activities has always been discharged to the Oily Waste Treatment Facility. Pumping of waste oil or bilge water has always been arranged through a subcontractor. Since 1982, paper and wood scraps have been placed in the dumpster for contract disposal in an off-station landfill. Prior to 1982, these wastes were disposed of in the on-station landfill. Since 1980, asbestos generated (quantities varied according to work load) has been doubled bagged and placed in a dumpster for asbestos only. PWD has picked up the asbestos periodically for off-station disposal in a landfill. Prior to 1980, asbestos was disposed of in the on-station landfill (sites 2, 5, and 6). Approximately 330 gallons per year of methylene chloride has been used in cleaning operations. The methylene chloride has been placed in 55-gallon drums and transported by Atlantic Marine to their licensed hazardous waste facility located off-station. Wastes generated by Atlantic Marine are summarized in Table 5-13.

5.2.4.5 North Florida Shipyards, Inc. North Florida Shipyards began operations on NAVSTA Mayport in 1982. The facility functions primarily as a satellite of the main shipyard, located in Jacksonville. Operations at the facility consist primarily of ship component repair, overhaul, and painting. Approximately one-half of the work is performed onboard ship and one-half in the shop. Wastes generated by the operations are lube oil, cleaning solvents, paint sludges and thinners, sandblast slag, and scrap metal. The waste lube and gear oils have always been placed in a drum and removed by an off-station contractor. Cleaning solvents are used in a parts wash and have always been removed by a separate off-station contractor. Painting and sandblasting wastes have always been containerized and taken to the main North Florida Shipyards facility. Scrap metal and parts have always been segregated by metal type and contract disposed off-station by DRMO. Office refuse and scrap wood are placed in a dumpster and have always been picked up by an off-station contractor.

Wastes generated by North Florida Shipyards are summarized in Table 5-14.

5.2.5 Fire Fighting Training. Three fire fighting training areas have been used at NAVSTA Mayport since 1959. Fire fighting training areas existing prior to 1959 were not located in the search of station records, review of aerial photographs, or interviews with station personnel. The oldest fire fighting training area identified (Site 7) was used from 1959 to 1972. This area is located south of the vehicle storage compound on an abandoned asphalt runway. The construction was reportedly a limestone base with a limestone berm around the pit.

The second training area was used from 1973 to 1982 (Site 13). It is located approximately 50 to 75 feet northeast of the new AIMD hanger, Building 1552. The area was excavated recently to a depth of

Table 5-13
Waste Generation from Atlantic Marine , Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/ year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATLANTIC MARINE | | Engine Oil | Variable | | | | | | ONTF | | | | |
| | | Paper and Wood Scraps | Variable | | | | | | On Station Landfill | | | | Off-station Contract Disposal |
| | | Asbestos | Variable | | | | | | On Station Landfill | | | | Off-Station Contract Disposal |
| | | Methyl Ethyl Ketone | 330 | | | | | | Off-Station Contract Disposal | | | | |

* All values in gallons per year unless otherwise noted.

| | Information confirmed by station personnel.

Table 5-14
Waste Generation from North Florida Shipyards, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/ year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NORTH FLORIDA SHIPYARD | | Lube Oil | 110 | | | | | | | | | | Off-Station Contract Disposal |
| | | Solvents (Chlorinated and Nonchlorinated) | less than 55 | | | | | | | | | | Off-Station Disposal |
| | | Sandblast Slag | variable | | | | | | | | | | Off-Station Disposal |
| | | Paint Sludges and Thinners | 20 | | | | | | | | | | Off-Station Disposal |
| | | Scrap Metal | variable | | | | | | | | | | Off-Station Contract Disposal |
| | | Refuse and Wood Debris | variable | | | | | | | | | | Off-Station Contract Disposal |

* All values in gallons per year unless otherwise noted.

[ ] Information confirmed by station personnel.

approximately four to six feet for pipeline installation and then backfilled; therefore, the materials from the training area have probably been disturbed and spread over a larger area.

The construction plans and materials were the same for both fire fighting training areas. For use of the area, fuel was floated on top of water placed within the pit (approximately two-thirds part water to one-third part fuel) and then ignited. Residual fuels and water either evaporated or infiltrated at the site; no collection sump or treatment system was used. It is estimated that 300 to 400 gallons of fuel was burned per month. The composition was approximately 90 to 95 percent waste fuel AVGAS, JP-4, or JP-5) and five to 10 percent waste oils with minor percentages of solvents, paint thinner, trichloroethylene, toluene, transformer oil (unknown if it contained PCB), and hydraulic fluid (unknown if it contained PCB). Waste liquids were collected in bowsers, pumped into truck tanks, and later sprayed into the training area. It was assumed that operations at the first fire fighting training area were conducted in a similar fashion.

The third fire fighting training area is located at the Fleet Training Center. This area has been used for fire fighting training for the Fleet Training Center since 1977 and continues to be used at present. The fire station at NAVSTA Mayport began using the facility in 1982 and discontinued use of their other fire fighting training areas at that time.

The Fleet Training Center training area is constructed on a 12-inch concrete pad with a berm and has a drain that leads to an oil-water separator (which reportedly is nonoperational approximately 50 percent of the time).

No. 2 fuel was purchased specifically for use at the training facility. For approximately six months in 1977, waste fuels were experimentally used; however, use of waste fuels was discontinued because sufficient control of burning characteristics was not possible. It is estimated that 20,000 gallons of No. 2 fuel and approximately 2,000 gallons of regular unleaded gas have been burned per quarter since 1977.

The oil-water separator located at the Fleet Training Center training area has malfunctioned on numerous occasions. When problems have occurred, waste oils have been pumped onto the surrounding soils. The soils in the area are very porous, and it is estimated that 50 percent of the oils could percolate into the soils.

5.2.6 Photo and Print Shops. The Audiovisual Command, a detachment of Naval Air Station (NAS) Jacksonville, operates a photograph developing shop. The shop has been located in Building 298 since 1978; prior to 1978 it was located in Building 50. The shop has historically processed black and white film and color slides.

Black and white prints are developed using the standard Kodak 417 Royal Print Process®, which includes:

1. Activation,
2. Stop solution, and
3. Rapid fixer.

Color slides are developed using Kodak's standard E-6 Process®, which includes:

1. Developer,
2. Reversal bath solution,
3. Color developer,
4. Conditioner,
5. Bleach,
6. Fixer, and
7. Stabilizer.

Prior to 1978, waste solutions were disposed of in the sanitary sewer system. Beginning in 1978, wastes containing fixer were collected in silver recovery jugs and sent to DRMO for recovery. In 1978, a recovery program was also established for scrap paper and film containing silver. These items had formerly been disposed of in the landfill (sites 1, 2, 4, 5, and 6.

Approximately six gallons per year of each of the above 10 solutions were used in the development (or expired) and required disposal. All containers were disposed of in the station landfills (sites 1, 2, 4, 5, and 6).

A review of station records and interviews with long-time station personnel did not indicate that print shops were ever present on NAVSTA Mayport.

5.2.7 Chemical Laboratories. Chemical laboratories are operated by the Fleet Training Center and PWD. The laboratory at the Fleet Training Center is operated to train personnel in the analysis of chloride in feedwater used in ship boilers. The laboratory was established in 1965 at Building 46 and was then moved to Building 1388 in 1977. Reagents employed at the laboratory are listed in Table 5-15. Waste solution, including expired or contaminated stock solution, were disposed of in the sanitary sewer. Since 1970, all laboratory solutions containing mercury have been poured into a polyethylene container. When the container was full, the mercury solution was transferred into a 55-gallon drum. The drums were saved for eventual off-station disposal by the environmental officer (PWD). In 1984 four of these drums developed leaks, and the wastes (approximately 200 gallons) were spilled on the surrounding ground near Building 1388 (Site 14). Approximately 120 gallons of waste, containing mercury diluted to 0.05 normality or less, has been generated per year by the laboratory.

Table 5-15

Reagents Used in Chemical Analyses Performed at the
Fleet Training Center, Naval Station Mayport, Florida

| Chemical | Stock Concentration | Post Test Concentration* |
|---|---|---|
| Sodium Hydroxide | 97 percent | 8 percent |
| Ethylene Diamine Tetraacetic Acid (EDTA) (disodium salt) Procedure Hardness Buffer | <10 percent | <10 percent |
| EDTA Hardness Titrant | 0.4 percent | 0.4 percent |
| Nitric Acid | 1.0 normality | 0.05 normality |
| Mercuric Nitrate | 0.5 normality | 0.01 normality |
| Isopropyl Alcohol | 99 percent | 99 percent |
| Phenolphthalein | 100 percent | 1 percent |

*After dilution and reactions with test chemicals.

The PWD laboratory was located at Building 283 from 1976 to 1978. The major purpose of the lab was to analyze samples from the sewage treatment plant. Analyses were normally limited to temperature, pH, turbidity, color, chlorine residual, and carbon dioxide. The laboratory is no longer used, and any wastes generated were poured down the sink.

5.2.8 Medical and Dental Facilities. The medical center provides outpatient care to station personnel. The center includes a medical clinic, pharmacy, pathology laboratory, dental clinic, and x-ray facility. Since July 1978, the center has been located in Building 1363; prior to July 1978, it was located in Building 298. Outpatient visits varied with fleet operations. Between 1960 and 1970, visits were estimated at approximately 5,000 per month; since 1970, they have increased to approximately 10,000 per month.

Medical clinic wastes included syringes, gauze pads, and containers that were disposed of in on-station landfills (sites 1, 5, and 6). Any liquid wastes such as alcohol were discharged to the sanitary sewer. Wastes generated by the medical and dental facilities are presented in Table 5-16.

The pharmacy dispenses pills, drugs, and medicines that would be considered typical of a civilian drug store but with less quantities of each material. (In 1978, approximately 7,000 prescriptions were filled per month; in 1985, 12,000 prescriptions per month were filled.) Expired materials were disposed of in the sanitary sewer at a rate of approximately one pound per year. Excess or expired antibiotics and chemotherapy chemicals were sent to NAS Jacksonville for disposal.

Waste from the pathology laboratory included ethyl acetate, acetone, urine, blood, and bacteria cultures. Ethyl acetate was disposed of in a toxic waste safety can at a rate of 20 milliliters per month. This can was then sent to the Jacksonville Hospital for disposal. Acetone used in staining bacterial cultures was disposed of in the sanitary sewer at a rate of approximately one pint per month. Blood and bacteria cultures were sent to the Jacksonville Hospital for disposal, and urine was disposed of in the station's sanitary sewer.

Dental clinic wastes included small quantities of metals used in the construction of amalgam fillings. These wastes were disposed of in the sanitary sewer system. In the 1980s, when the medical outpatient visits averaged approximately 10,000 per month, approximately five pounds of elemental mercury waste was generated per year. This waste was collected through an HGX® collection system and turned in to the bulk supply officer at NAS Jacksonville. This recovery system was established around 1965. Prior to 1965 wastes went to the on-station landfill (sites 1, 2, 4, and 5) or to the sanitary sewer.

From 1980 to the present, approximately 0.5 pound per year Rexillium III waste also was generated and was disposed of in the station landfills

Table 5-16
Waste Generation from Medical and Dental Facilities, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/ year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHARMACY | 1363,298 | Prescription Drugs | 1 pound per year | Sanitary Sewer | | | | | | | | | |
| PATHOLOGY | 1363,298 | Ethyl Acetate | 2 ounces per year | Sanitary Sewer | | | | | | | | | |
| | | Acetone | 1.5 gallons per year | Sanitary Sewer | | | | | | | | | |
| DENTAL | 1363,298 | Silver | 5 pounds per year | Sanitary Sewer | | | | | NAS Jacksonville | | | | |
| | | Beryllium | 0.5 pounds per year | Landfill | | | | | | | | | |
| X-RAY | 1363,298 | Silver | 3 pounds per year | Sanitary Sewer | | | | | NAS Jacksonville | | | | |

* All values in gallons per year unless otherwise noted.

| | Information confirmed by station personnel.

(sites 2, 5, and 6). Rexillium III is used in amalgams and is composed of 74 to 78 percent nickel, 12 to 14 percent chromium, 4 to 6 percent molybdenum, and 4.8 percent beryllium.

Approximately one gallon of isopropyl alcohol, 10 ounces of acetone, and 10 ounces of chloroform were used annually. Although most of these liquids evaporated some small quantities were disposed of in the sanitary sewer system.

The x-ray facility at the center generates waste silver from solutions used in the development of the x-ray film. Prior to 1970, solutions containing the silver were disposed of in the sanitary sewer. After this period, a silver recovery plating unit was installed, and approximately three pounds of silver was recovered each year and turned over to NAS Jacksonville.

5.2.9 Gauge/Calibration Shops. Gauge/calibration shops at the station (excluding SIMA, see Section 5.2.3.2) include the Naval Sea Support Calibration Laboratory, Radiac Repair Shop, and Ground Electronics Shop. The Calibration Laboratory, located in Building 1303, provides special support in the calibration of electronic instrumentation. No wastes other than normal office wastes were generated, and no radiation sources were used in calibrations.

The Radiac Repair Shop has been located in Building 1380 since 1979 (a new building was built for the shop). Between 1969 and 1979, it was located in a quonset hut in the area where Building 1380 was constructed. Prior to 1969, radiac repairs were done in temporary spaces within other buildings. The shop repairs and calibrates all NAVSTA Mayport's radiation monitoring equipment. Table 5-17 lists the typical chemicals used at the facility. Equipment parts are sent periodically to DRMO for disposal. All solvents, oils, and washes listed in the table are poured on a rag, which is then used to clean instruments. Excess liquid generally evaporates from the rag, and the rag is disposed in the station landfills (sites 1, 2, 4, 5, and 6) (as trash). The sealed radiation sources that were originally purchased for calibration (see Table 5-17) are still in use. None has been disposed of, and ultimate disposal will be handled by the manufacturer. The sources and handling procedures are checked periodically by a Navy inspection team.

The Ground Electronics Shop, located in Building 436, maintains communication instrumentation for the station. Generally, no wastes other than trash were generated, and no radiation sources were used in calibrations. Occasionally, instruments containing mercury were disposed of through the PWD environmental officer. Handling of dials containing radium rarely occurred, but when disposal was necessary, it was handled through the Radiac Repair Shop.

5.2.10 Total Liquid Industrial Waste Generation at NAVSTA Mayport. It is estimated that 179,000 gallons per year of liquid industrial wastes is currently generated on NAVSTA Mayport (see Table 5-18). These wastes

Table 5-17

Typical List of Materials Used/Stored at the
Radiac Repair Shop, Naval Station Mayport, Florida

| Material | Estimated Annual Use |
|---|---|
| Acetone | 0.5 Pint |
| Alcohol, denatured | 0.5 Pint |
| Alcohol, isopropyl | 0.5 Pint |
| Acrylic lacquer | 24 Pints |
| Adhesive, spray | 1 Pint |
| Adhesive, tube | 3 Tubes |
| Circuit Cooler | 1 Pint |
| Ether | 0.25 Pint |
| Roach/ant spray | 1 Pint |
| WD-40 Lubricant spray | 2 Pints |
| Penetrating oil | 1 Pint |
| Trichloroethane | 3 Gallons |
| Radiac wash | 0.5 Pint |
| 120 Curies-Cesium 137 Standard | -- |
| 30 Curies-Cesium 137 Standard | -- |
| 808 Micrograms (2) | |
| Plutonium beryllium Standard | -- |

-- = Does not produce any wastes.

Table 5-18

Yearly Summary of Estimated Quantities of Liquid Wastes Generated by Industrial Operations at Naval Station Mayport, Florida

| | Lube Oil | Hydraulic Fluid | PD-680 | Solvents | Paint Sludge and Thinner | JP-5 | Spent acid/ Plating Solution | Boiler Cleaning Solution |
|---|---|---|---|---|---|---|---|---|
| PWD | | | | | | | | |
| Trades Shops | 55 | | | 440 | 440 | | | Variable |
| Transportation | 1,600 | 300 | | 100 | | | | |
| Naval Air Facility | | | | | | | | |
| Squadron HSL-36 | 400 | 250 | 180 | 180 | 50 | | | |
| Squadron HSL-42 | 220 | 110 | 55 | 55 | 55 | 660 | | |
| Ship Operations | | | | | | | | |
| Harbor Operations/ Pier Operations | 3,800 | | | 1,000 | 5,000 | | | |
| SIMA | 240 | 50 | 290 | 2,700 | 350 | | | |
| Shipboard | 25,000 | 26,000 | 36,000 | 16,000 | Variable | | 22,000 | 28,000 |
| Tenants | | | | | | | | |
| North Florida Shipyards, Inc. | 110 | | | | 20 | | | |
| NEX Service Station | 960 | | | | | | | |
| Auto Hobby Shop | 5,200 | | | 87 | | | | |
| TOTAL | 38,000 | 27,000 | 36,000 | 21,000 | 6,000 | 660 | 22,000 | 28,000 |
| Total gallons = | 179,000 | | | | | | | |

*Quantities are reported in gallons per year.

consist of engine oil, hydraulic and transmission fluids, PD-680 (and nonchlorinated solvents), chlorinated solvents, paint sludge and thinners, aircraft fuel, spent acid and plating solutions, and boiler cleaning wastes. Wastes are generated by both shore and shipboard operations.

5.3 ORDNANCE OPERATIONS. Ordnance operations at NAVSTA Mayport include storage of ordnance items, handling and loading of ordnance, and disposal of explosives. These activities are described in the following sections.

Ordnance is stored at the magazine areas located south of Patrol Road, the airfield on the west-central section of the station, and at pier facilities along the Mayport basin. A list of existing magazines, and their respective capacities and associated safety distances, is presented in Table 5-19. The locations of the magazine and storage areas, including the explosive quantity safety distance (EQSD) arcs, are shown in Figure 5-1.

The NAVSTA Mayport magazine area is secured, fenced, and posted, and access to the area is controlled. No manufacturing or demilitarization activities such as steam-out, drill-out, degreasing, or ordnance repair are conducted in the magazine area.

The second major explosive hazard area of NAVSTA Mayport consists of designated pier areas where explosives may be handled during ship loading and unloading operations in support of fleet operations and fleet readiness. The principal pier areas used for that purpose include Bravo, Charlie, and Delta piers located within the Mayport basin. The EQSD arcs for each of these pier facilities are shown in Figure 5-1.

A third explosive hazard area is the designated Red Label area at the southwestern end of the Naval Air Facility runway. The associated EQSD arc is 1,250-feet (see Figure 5-1).

Table 5-19

Existing Magazines at Naval Station Mayport, Florida

| Magazine | Building Number | Approved Capacity (pounds new) | Class and Division | EQSD (feet) |
|---|---|---|---|---|
| IACI | 455 | 1,000,000 | 1.4 | 100 |
| IBT2 | 86 | 150,000 | 1.1 | 2,770 |
| IACX3 | 454 | 225,000 | 1.1 | 2,965 |
| IBT4 | 87 | 225,000 | 1.1 | 2,965 |
| IACX5 | 453 | 225,000 | 1.1 | 2,965 |
| IBT6 | 88 | 150,000 | 1.1 | 2,965 |
| IACX7 | 452 | 150,000 | 1.1 | 2,965 |
| IBT8 | 82 | 35,000 | 1.1 | 2,965 |

Source: Navy, n.d.(b).

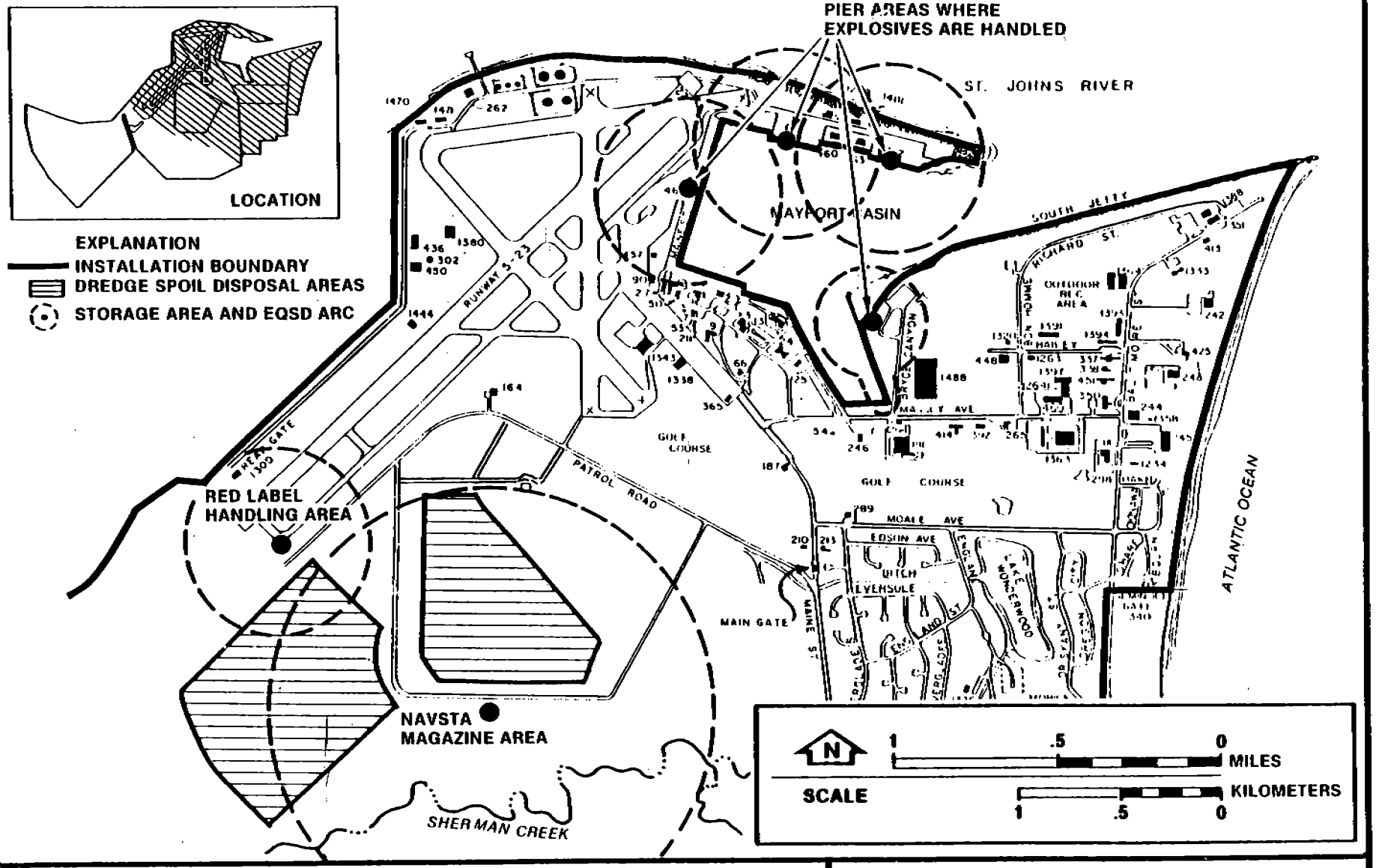



**Figure 5-1**
**ORDNANCE STORAGE/HANDLING AREAS AND EXPLOSIVE QUANTITY SAFETY DISTANCE ARCS**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

# CHAPTER 6. MATERIALS HANDLING: STORAGE AND TRANSPORTATION

This section describes the handling, storage, and transportation of various materials at Naval Station (NAVSTA) Mayport. These materials include industrial materials [such as solvents; paint; petroleum, oil, and lubricants (POL); pesticides; and polychlorinated biphenyl (PCB) items]; hazardous waste; ordnance; and radiological materials.

## 6.1 INDUSTRIAL.

6.1.1 Materials Storage: Defense Reutilization and Marketing Office. The Defense Reutilization and Marketing Office (DRMO) [formerly the Defense Property Disposal Office (DPDO)] has been located in Building 412 since being assigned to NAVSTA Mayport in 1967. DRMO is responsible for the resale and disposal of materials with a salvage value. Materials handled by DRMO have included vehicles, scrap metal, scrap equipment, electrical capacitors and transformers, and other excess property that the Navy no longer needs. Since 1980, DRMO has been responsible for the disposal of the hazardous wastes generated on-station and by ship operations. Since 1967, DRMO has maintained a large fenced storage area (Site 10) for the storage of the materials prior to resale. Items stored in this area included PCB transformers, chlorinated solvents, and nonchlorinated solvents. Although no large spills were reported, minor leakage and spillage has occurred on the soils of the area.

6.1.2 Supply Storage. The Naval Supply Center (NSC) at NAVSTA Mayport is located in Building 191. NSC is responsible for acquiring and dispensing materials needed to support operations at the station. Hazardous items that have been received, stored, and subsequently issued at NSC include paints; oils; cleaning solvents (PD-680, Stoddard Solvent, perchloroethylene, trichloroethane, trichloroethylene, methylene chloride, acetone, methyl ethyl ketone, isopropyl alcohol, carbon tetrachloride, methyl isobutyl ketone, chloroform, and ethyl alcohol); mineral spirits; toluene; brake fluid; hydraulic fluids; and others. These items have always been stored in a secure area of Building 191 away from innocuous items. Items that exceed the recommended shelf life are transferred to DRMO for disposal. DRMO disposes of these items through sales. If hazardous items are not sold, they are presently disposed of by contract disposal. Prior to 1980 these items, if unsold, were disposed of in station landfills (sites 1, 2, 4, 5, and 6).

6.1.3 Chemical and Hazardous Materials Storage. From 1967 until 1980, the only area that consistently was a repository of hazardous items awaiting disposal was the DRMO storage yard (Site 10). Storage in this are averaged between 500 and 1,000 gallons. From 1980 through 1985, hazardous materials (chlorinated and nonchlorinated solvents, electrical capacitors, and electrical transformers) were stored in a fenced, secure

area near Building 1380. This area was located on the asphalt of an abandoned runway (Site 7). Since 1984, most hazardous materials have been collected and stored in a new building constructed specifically for the storage of wastes; however, Site 7 has continued to be used as an emergency storage area.

6.1.4. Petroleum, Oil, and Lubricants Storage. POL at NAVSTA Mayport is stored in containers ranging in size from one pint to 1,134,000 gallons. The tanks on-station are both aboveground and underground and are constructed of carbon steel, concrete, or fiberglass. The locations of the tanks are listed in subsequent paragraphs and tables in this section. Leak detection for the underground tanks ranges from liquid-level indicators to no leak detection. The aboveground tanks have spill containment structures ranging from full containment to no containment. Several areas on-station are equipped with oil-water separators for storm and wash water runoff. Seven major areas of bulk POL storage are located on-station: (1) the NSC fuel farm, (2) the ship lube oil tanks, (3) Buildings 250 and 1430, (4) Building 1241, (5) the Fleet Training Center fire fighting school, (6) the Public Works Department (PWD)-Transportation Garage, and (7) the Naval Exchange (NEX) Service Station. These areas are identified in Figure 6-1. In addition, small fuel oil tanks are located station-wide. These tanks contain fuel oil used to fire hot water boilers and heaters.

The NSC fuel farm, PWD-Transportation, and NEX Service Station tanks are leak checked by inventory on a daily basis. The pipelines used to transfer fuel, lube oil, and waste oil are pressure checked yearly. The tanks are emptied, cleaned, and visually inspected every three to five years. Tank cleaning was performed by an off-station contractor until 1976. The contractor reportedly transported off-station all sludges generated by cleaning the tanks. Since 1976, the tanks have been cleaned by Navy personnel and the sludge disposed of in the Oily Waste Treatment Facility.

JP-5, diesel fuel-marine (DFM), and ship lube oil are received by barge at the barge unloading pier in the St. Johns River (Building 1455). Motor vehicle gasoline (MOGAS), fuel oil, and diesel fuel are delivered by tank truck to the individual tank being filled.

6.1.4.1 JP-5. Bulk JP-5 is stored in two earth-mounded concrete tanks (tanks 201 and 202) at the NSC fuel farm. These tanks have a capacity of 567,000 gallons each. The JP-5 is transferred by pipeline to the truck fill stand (Building 1439). The JP-5 is loaded into tank trucks that are driven to the aircraft being fueled. Station personnel report that JP-5 has been used since 1965. Prior to 1965, both JP-4 and aviation gasoline (AVGAS) were stored in the tanks.

6.1.4.2 Diesel Fuel-Marine. DFM is stored in two earth-mounded concrete tanks (tanks 203 and 204) at the NSC fuel farm. The tanks have a capacity of 1,134,000 gallons each. The DFM is piped directly to risers

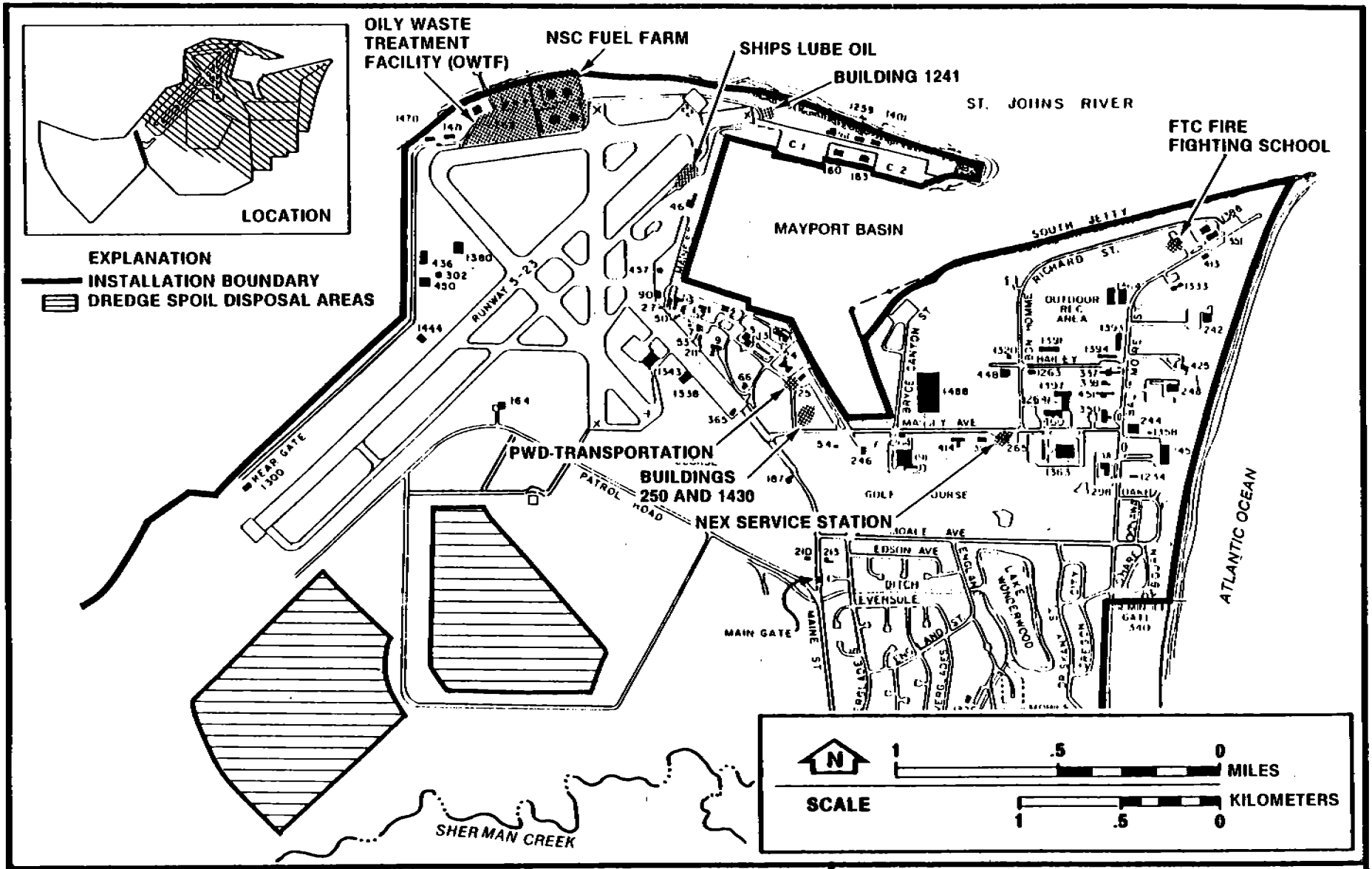



**Figure 6-1**
**BULK POL STORAGE LOCATIONS,**
**NAVAL STATION MAYPORT, FLORIDA**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

located along the piers. Flexible hoses are used to fuel the ships docked at the piers. DFM may also be transferred to a fuel barge at the barge unloading pier or at one of the risers along the main piers. The barges are then spotted next to the ship being fueled.

6.1.4.3 Ship Lube Oil. Lube oil for shipboard use is stored in two earth-mounded steel tanks (tanks 1330 and 1331) adjacent to Building 46 and Bravo pier. These tanks have a capacity of 40,000 gallons each. Lube oil is piped directly to risers located along the piers and transferred to the ships by flexible hose.

6.1.4.4 Diesel Fuel. Diesel fuel is stored in an aboveground steel tank (10,000 gallons) at the Fleet Training Center fire fighting school (Section 5.2.5) for use in training students to fight fires. The tank does not have any form of spill containment. Diesel fuel is also stored in two bermed, aboveground, 30,000-gallon tanks at the Building 250 steam plant. The diesel is used as boiler fuel. The Building 1241 steam plant has two 35,000-gallon underground steel tanks that contain diesel fuel for the boilers. A 1,000-gallon underground steel tank is used by the PWD-Transportation Garage (Section 5.2.1.6) for diesel fuel for vehicle use.

6.1.4.5 Motor Vehicle Gasoline. Gasoline for vehicle use is stored in three (10,000-, 4,000-, and 2,000-gallon) underground steel tanks at the PWD-Transportation Garage (Section 5.2.1.6). The NEX Service Station (Section 5.2.4.1) has three 10,000-gallon underground fiberglass tanks for gasoline storage. The Fire Training Center fire fighting school has a 2,000-gallon underground tank for gasoline to be used to ignite the diesel fuel used in training exercises.

6.1.4.6 Fuel Oil. Fifty fuel oil tanks for heating purposes are located stationwide. The tanks range in capacity from 80 to 10,000 gallons and are both aboveground and underground. Table 6-1 lists these tanks and their capacities.

6.1.4.7 Waste Oil. Waste oil is accumulated from other operations and stored in bulk at three main locations on NAVSTA Mayport: (1) the Oily Waste Treatment Facility, (2) the Building 250 steam plant, and (3) the station incinerator. Three 210,000-gallon, earth-mounded concrete tanks (tanks 99, 100, and 101) are used for the storage and treatment of the waste oil generated by station and shipboard operations. The waste oil is received at the tanks by pipeline from the piers or by tank truck. Waste oil is stored in one 10,000-gallon underground steel tank and 5,000-gallon aboveground steel tank at the Building 250 steam plant. The waste oil is used to fire the boilers to produce steam for ships berthed at NAVSTA Mayport. Waste oil is also stored in an underground tank at the station incinerator (Building 1430). The oil is used to ignite the incinerator and to augment burning during operation. A 35,000-gallon underground steel tank located at the Building 1241 steam plant is currently empty but has been used for waste oil storage at intermittent

Table 6-1

Fuel Oil/Diesel Storage for Heating Purposes,
Naval Station Mayport, Florida

| Building | Capacity (gallons) | Description |
|---|---|---|
| 13 | 300 | Underground (UG) |
| 25 | 180 | Aboveground (AG) |
| 36 | 400 | UG |
| 38 | 2,500 | UG |
| 46 | 500 | UG |
| 53 | 250 | AG |
| 160 | 80 | AG |
| 163 | 80 and 180 | AG |
| 190 | 500 | UG |
| 191 | 500 | UG |
| 210 | 180 | AG |
| 211 | 180 | AG |
| 213 | 180 | AG |
| 214 | 180 | AG |
| 234 | 500 | UG |
| 242 | 1,000 | UG |
| 243 | 1,000 | UG |
| 245 | 1,000 | UG |
| 246 | 1,000 | UG |
| 261 | 250 | AG |
| 263 | 180 | AG |
| 264 | 180 | AG |
| 4 | 3,300 | AG |
| 298 | 850 | AG |
| 1,235 | 850 | AG |
| 289 | 300 | UG |
| 298 | 250 | AG |
| 301 | 1,000 | UG |
| 338 | 2 x 3,000 | UG |
| 350 | 500 | UG |
| 351 | 1,000 | UG |
| 353 | 1,000 | UG |
| 358 | 10,000 | UG |
| 363 | 2,000 | UG |
| 365 | 500 | UG |
| 412 | 55 | AG |
| 413 | 500 | UG |
| 425 | 1,000 | UG |
| 436 | 1,000 | UG |
| 437 | 1,000 | UG |
| 448 | 1,000 | UG |
| 450 | 500 | UG |
| 451 | 4,000 | UG |
| 460 | 1,000 | UG |
| 1,234 | 100 | AG |
| 1,265 | 500 | UG |
| 1,388 | 1,000 | UG |
| 1,333 | 1,500 | UG |
| 1,343 | 10,000 | UG |
| 1,363 | 2,500 | UG |

times in the past. Waste oil is delivered to the steam plant and incinerator by tank truck from the Oily Waste Treatment Facility. All waste oil produced on NAVSTA Mayport is burned in either the boilers or incinerators. Smaller storage facilities exist at the points of waste oil generation stationwide.

6.1.4.8 Petroleum, Oil, and Lubricant Spills. Station personnel report that two POL spills have occurred at NAVSTA Mayport.

In 1985, an underground valve in the Oily Waste Treatment Facility collection pipeline failed, discharging an unknown quantity of oily waste into the ground at the junction of Alpha and Bravo piers (Site 12). The valve was replaced and a portion of the contaminated soil removed and disposed of off-station by a contractor. Station environmental personnel report that an area of contaminated soil still exists because small quantities of oil frequently seep into a nearby electrical manhole and a storm sewer.

Approximately 500 gallons of DFM was discharged into the St. Johns River during a barge unloading operation in 1982. Wave surge from a passing ship forced the fuel barge against the barge unloading pier, cracking the discharge valve. The fuel entered the river over the side of the barge. The U.S. Coast Guard was called, and the fuel was contained and cleaned up.

6.1.5 Pesticide Storage. The major stocks of pesticide on NAVSTA Mayport have always been stored by the Pesticide Department. Other pesticide stocks are maintained by the NEX Commissary (retail sales item), the golf course, the supply center, and the various units on-station. The original storage area for pesticide was Building 49 until 1963. From 1963 to 1964, pesticides were stored in a shed on the southwest corner of Building 484, located near the lighthouse on the western side of the station. The pesticide storage area was moved back to Building 49 from 1964 to 1978. With the construction of the new pesticide area, Building 1433, pesticide storage was moved in 1978. Pesticides at the golf course are stored in Building 349.

6.1.6 Polychlorinated Biphenyls Storage. Until PCB was recognized as a potential health hazard, transformers and capacitors were either in-service, out-of-service awaiting repair, or out-of-service awaiting disposal. Prior to 1978, items for disposal were sent to DRMO (Site 10), where they were sold to outside agencies. Fluids from items repaired, along with rags and other items, were disposed of in the landfill (sites 1, 2, 4, 5, and 6). Since 1978, transformers and capacitors containing PCB have been stored at the Hazardous Waste Storage Area (Site 7), the east end of the DRMO compound (Site 10), or in a transformer storage area east and near Tank 204 (Site 16). A PCB inventory conducted in 1981 indicated only three of 275 transformers and capacitors surveyed contained PCB. Reportedly, only a few leaks of less than one gallon have occurred in the storage areas (sites 7, 10, and 16).

6.1.7 Storage Lots and Scrap Yards. A fenced storage yard has been maintained by DRMO (formerly DPDO) at Building 412 since 1967. Prior to 1967, items for disposal were shipped to NAS Jacksonville or disposed of in the station landfill (sites 1, 2, 4, 5, and 6). The yard is used to store excess materials prior to resale. The old runway adjacent to DRMO and the Oily Waste Treatment Facility has been used as a general scrap yard since the closing of the runway. Small fenced storage yards are maintained by the Supply Department (Building 191), Shore Intermediate Maintenance Activity (SIMA) (Building 1488), Jacksonville Shipyards, and Atlantic Marine.

6.2 ORDNANCE STORAGE AND TRANSPORTATION. Ordnance and other explosives are stored at the station's magazine area located south of the Naval Air Facility airfield on the west-central portion of the installation. At present, ordnance is stored in eight magazines (see Table 5-18). The explosive capacity of each of these magazines is limited to approved capacity, and each has an approved explosive quantity safety distance (EQSD) arc.

Transportation of ordnance between the NAVSTA Mayport magazine area and loading Red Lable area follows predetermined explosives handling routes. Storage of explosives is monitored by the station's Hazardous Materials Handling Review Board.

# CHAPTER 7. WASTE PROCESSING

7.1 INTRODUCTION. Waste processing at Naval Station (NAVSTA) Mayport consists of three primary operations: solid waste disposal, sewage treatment, and waste oil treatment/recovery.

Ultimate waste disposal of hazardous waste is off NAVSTA Mayport property. The disposal is under contract to a disposal company and has been referred to in this report as off-station contract disposal.

7.1.1 Sewage Treatment Plant. The first sewage treatment plant, constructed on NAVSTA Mayport prior to 1962, was located adjacent to the water treatment plant and near buildings 9 and 47. Primary treatment was provided by an Imhoff tank. Plant capacity is unknown. Effluent was discharged to a series of drain fields south of the Mayport basin (see Table 7-1). The primary treatment process did not generate sludges that required disposal.

The existing sewage treatment plant, located in and around Building 285, has been in operation since 1962. From 1962 to 1972, the sewage treatment plant provided primary treatment for waste. The original design flow was 1.8 million gallons per day, and the operating flow was approximately 1 million gallons per day. The effluent from the primary sewage treatment plant was discharged to the St. Johns River (see Table 7-1). The primary treatment process did not generate sludges that required disposal.

In 1972, the sewage treatment plant located at Building 285 was expanded to a secondary treatment facility using an activated sludge system and four drying beds. Treated effluent has been discharged to the St. Johns River since 1972 (see Table 7-1). Between 1972 and April 1985, the sludge drying beds were cleaned once every quarter. The dewatered sludge was landfilled on-station (sites 2, 5, and 6). Since April 1985, the dewatered sludge removed from the drying beds has been stockpiled next to the beds. Effluent from the sludge drying beds percolates into the ground and enters an underdrain system, where it is returned to the head of the plant. The results of a chemical analysis of the sludge are presented in Table 7-2.

7.1.2 Industrial Waste Treatment Plants. Two industrial waste treatment plants have been used at NAVSTA Mayport: the Oily Waste Treatment Facility and the Building 1241 neutralization basin. The operation of the Oily Waste Treatment Facility is described in Section 7.1.3 and the operation of the neutralization basin, in Section 5.2.1.7 (Boiler Plants).

7.1.3 Waste Oil Recovery Collection System/Treatment Facilities. Ships berthed at NAVSTA Mayport have always discharge oily wastes, consisting of bilge water with some ballast wastes, into a pierside recovery collection system. The pierside recovery collection system empties into

Table 7-1

Waste Generation from Sewage Treatment Plant, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEWAGE TREATMENT PLANT | near Buildings 9 and 47 | Treated Effluent | unknown | On-site Drainfield | | | | | | | | | |
| | 285 (1962 to present) | Treated Effluent | 1.0 million gallons per day | | | | | | St. Johns River | | | | |
| | | | 1.8 million gallons per day | | | | | | | | St. Johns River | | |
| | | Dewatered Sludge | variable | | | | | | | | Station Landfill (Sites 2,5,6) | | |

* All values in gallons per year unless otherwise noted.

[ _ _ _ _ _ ] Information estimated.

[ _____ ] Information confirmed by station personnel.

Table 7-2

Results of Sewage Treatment Plant Sludge Analysis
Performed January 1985, Naval Station Mayport, Florida

| Parameter | Units | Grade I Criteria | Results |
|---|---|---|---|
| Total Nitrogen | Percent dry weight | -- | 3.2 |
| Total Phosphorus | Percent dry weight | -- | 1.6 |
| Potassium | Percent dry weight | -- | 0.69 |
| Cadmium | Milligrams per kilogram | <30 | 7.8 |
| Copper | Milligrams per kilogram | <900 | 899 |
| Lead | Milligrams per kilogram | <1,000 | 207 |
| Nickel | Milligrams per kilogram | <100 | 229* |
| Zinc | Milligrams per kilogram | <1,800 | 1,259 |
| pH | Units | -- | 6.07 |
| Total Solids | Percent | -- | 3.6 |

*Exceeds Grade I maximum.

Source: NAVSTA Mayport, 1985.

Note: Nickel plating has not occurred on-station at NAVSTA Mayport. The source of the nickel is unknown.

lift stations, which transfer the wastes to collection tanks at the Naval Supply Center (NSC) fuel farm. When pierside discharge is not possible, the oily waste can be recovered in barges adjacent to the ships. These barges are off-loaded into the Oily Waste Treatment Facility at the barge on-loading pier. Donuts are also used at Mayport for off-loading oily wastes from ships when required. Oil from these donuts is recovered by discharging to the pierside recovery collection system.

The oily wastes recovered are collected in two 155,000-gallon overflow holding tanks [tanks 99 and 100 (see Figure 7-1)] at the NSC fuel farm. Here, the oil and water from the bilges are allowed to separate over a 24-hour period by differences in specific gravity. After this period, the separated bulk oil is decanted and collected for disposal. Recovered bulk oil is transferred to another 155,000-gallon tank [Tank 101 (see Figure 7-1)] for storage prior to disposal. The separated water from the holding tanks still has a high oil and grease content. This water is pumped to the Oily Waste Treatment Facility for processing prior to discharge to the St. Johns River. Any sludge that collects in the bottom of the holding tanks can be transferred to one of the sludge lagoons (see Figure 7-1).

The Oily Waste Treatment Facility is located at the NSC fuel farm on the western side of NAVSTA Mayport and adjacent to the St. Johns River. The main treatment facility for containing oily wastes is the oily waste treatment system. A site layout of the oil separation tanks and the treatment plant is presented in Figure 7-1, and a process flow diagram of the Oily Waste Treatment Facility is shown in Figure 7-2. The facility is typically operated eight hours a day except during times of high flow. Average daily flow at the Oily Waste Treatment Facility is 45,507 gallons per day.

At the Oily Waste Treatment Facility, the wastewater, containing entrained oil, enters a chambered rapid mix/flocculation tank. In the rapid mix section, hydrated lime is added as a coagulant aid. The rapid-mix tank has a capacity of 1,200 gallons, which provides six minutes of detention at the design rate of 200 gallons per minute. The oily wastewater then flows into the flocculation tank, where the mixture is allowed to form a settleable floc. The flocculation tank has a capacity of 6,200 gallons and provides about 31 minutes of detention at the design rate of 200 gallons per minute. The flocculated waste solids then flow into a centerwell-feed clarifier. The floc settles to the bottom with the clarified water overflowing the surface. A sludge scraper is constructed in the bottom of the clarifier to direct sludge to a center hopper. Twenty percent of the sludge is recirculated to the head of the flocculation tank. This recirculation serves to improve flocculation and sedimentation in the clarifier. The clarifier is designed with an overflow rate of 900 gallons per square foot per day.

From the clarifier, the effluent enters a neutralization tank. Overflow from the neutralization tank flows to an effluent leaching pond, which has an overflow to the St. Johns River.

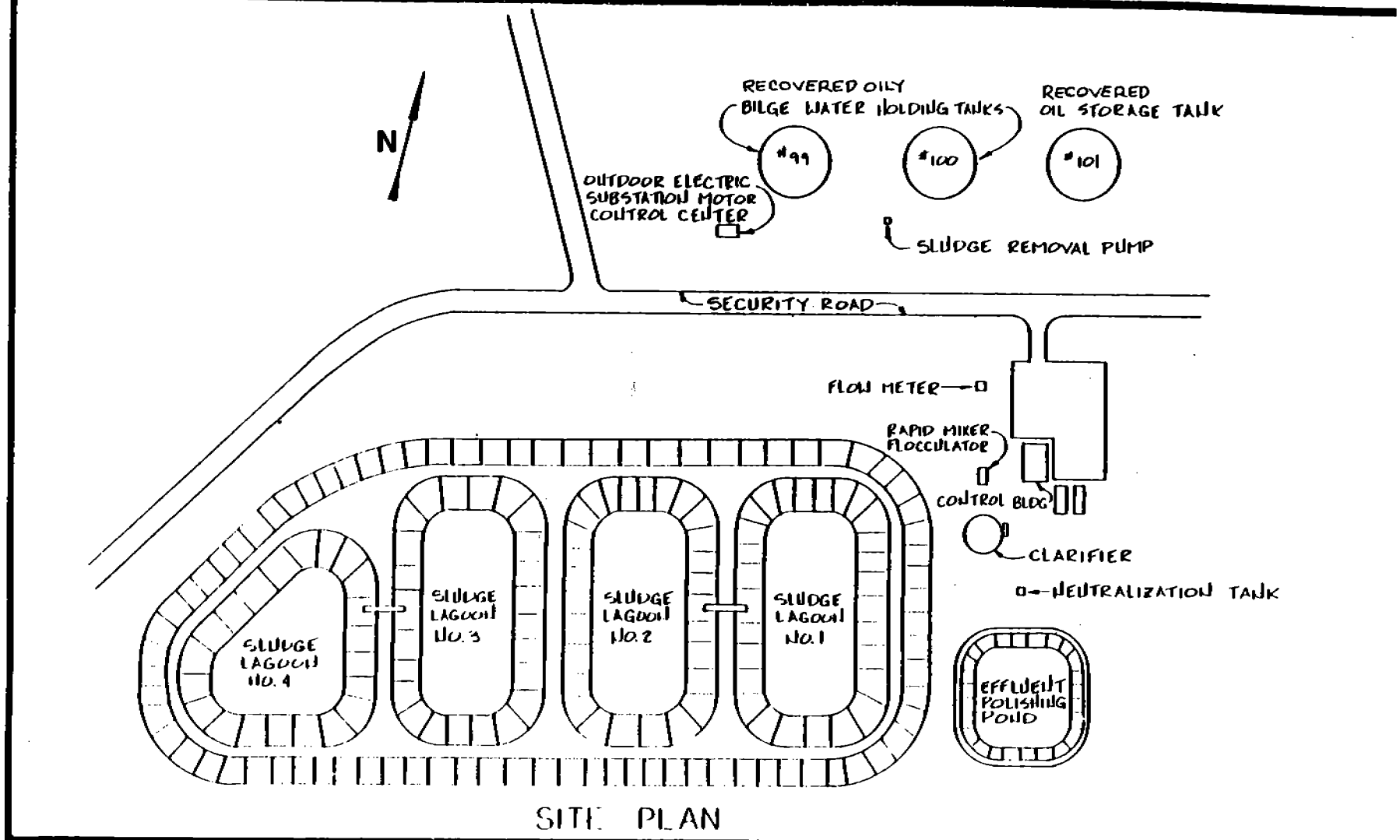
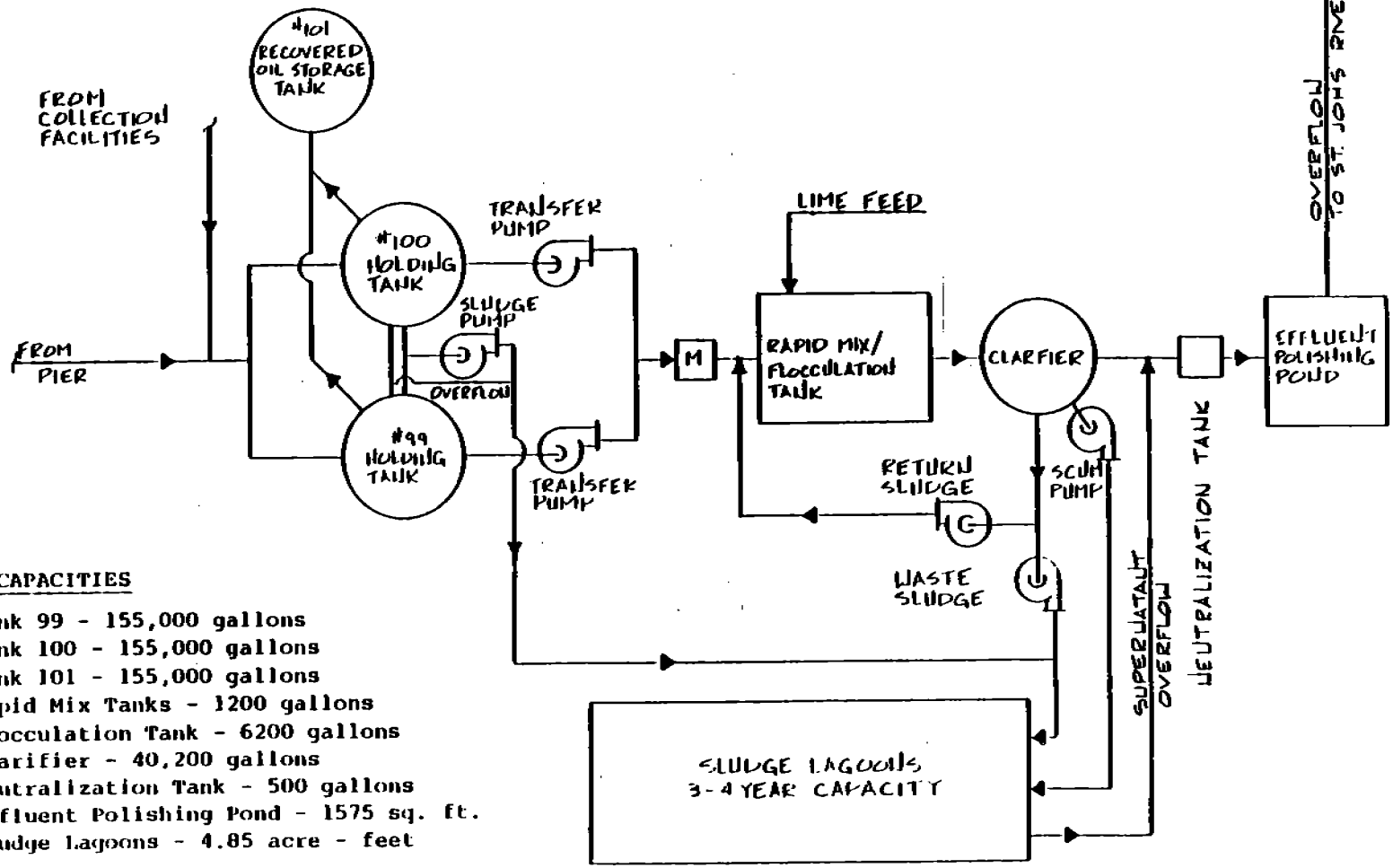



**Figure 7-1**
**NAVAL STATION MAYPORT OILY WASTE TREATMENT FACILITY SITE PLAN**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**




UNIT CAPACITIES

1. Tank 99 - 155,000 gallons
2. Tank 100 - 155,000 gallons
3. Tank 101 - 155,000 gallons
4. Rapid Mix Tanks - 1200 gallons
5. Flocculation Tank - 6200 gallons
6. Clarifier - 40,200 gallons
7. Neutralization Tank - 500 gallons
8. Effluent Polishing Pond - 1575 sq. ft.
9. Sludge Lagoons - 4.85 acre - feet

**Figure 7-2**
**NAVAL STATION MAYPORT OILY WASTE TREATMENT FACILITY PROCESS FLOW DIAGRAM**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

The oil and lime sludge from the clarifier is transferred to four sludge lagoons for concentration and storage. These lagoons are 4.85 acre-feet and were designed to provide three to four years of sludge storage. However, the sludge has never been removed from the lagoons since 1978, and the lagoons do not show signs of filling up.

From 1973 to 1978, prior to the installation of the existing Oily Waste Treatment Facility, recovered wastewater collected in tanks 99 and 100 was discharged into a series of drain fields in the area where the current facility is located. A pit for system overflow (Site 8) and extra storage capacity was located in the area currently occupied by sludge lagoons 3 and 4. This pit was triangular in shape and approximately six feet deep. Waste oils from ships were occasionally disposed of in this open pit. Waste oils in the pit permeated the soils of the pit and occasionally overflowed into the St. Johns River. It is not known if this pit was backfilled or reexcavated during the construction of the existing lagoons.

Prior to 1978, all waste oils recovered and stored in Tank 101 were sold to an off-station waste oil contractor. Since that time, all waste oil generated has been burned in the station boilers and incinerator.

7.1.4 Solid Waste Disposal. Solid wastes have been disposed of by two primary methods on NAVSTA Mayport: landfilling and incineration. Most of the solid wastes generated have always been disposed of on-station.

7.1.4.1 Landfills. Several landfills were used for solid waste disposal on NAVSTA Mayport from 1942 until early 1985. Prior to 1979, all solid wastes generated were disposed of in the landfills, including putrescible wastes, paper trash, building rubble, scrap wood, scrap metal, sewage sludge, and drummed wastes. The drummed wastes included waste oils, paints, solvents, and thinners generated by both shipboard and station operations. From 1942 until the early 1970s, some of these drummed wastes were used to burn the landfill contents to reduce its volume. Some drummed waste oils were recovered from the landfills by pest control personnel and used for mosquito control, and other drummed wastes remained in the landfill. From 1979 to early 1985, building rubble, large scrap wood, unburnable debris, and incinerator wet ash were the major items placed in the landfill. Small quantities of nonauthorized items including paints, solvents, and oils were occasionally disposed of in the landfill.

7.1.4.2 Incinerator. Since 1979, the solid waste incinerator, located in Building 1430, has been used to dispose of all refuse and burnable garbage generated by both NAVSTA Mayport and the Ribault Bay housing area. The solid waste is placed in dumpsters, which are emptied into trucks and taken to the incinerator. The garbage is sorted, and all unburnable large metal scrap and items too large for the incinerator are removed. The scrap metal is sold to an off-station contractor for disposal. The large items are placed in the wet ash bin and hauled to

the landfill. Small metal items such as cans are put into the incinerator. The unburned metals are removed with the wet ash. The incinerator is contractor operated 24 hours a day and has a design capacity of 48 tons per day. The current loading is 42 to 45 tons per day. Waste oil and diesel fuel are used to augment burning. The waste oil (collected from various locations on-station and also recovered from bilge water and berthed ships) is obtained from the NSC fuel farm.

Heat from the incinerator is used to generate steam for ships docked at NAVSTA Mayport. The boiler has an operating pressure of 180 pounds per square inch. Blowdown is continuous and is used to quench the ash generated by the incinerator. Phosphate and sulfite are used to treat the boiler water. Fly ash is trapped in a baghouse filter and disposed of with the wet ash. Wet ash is removed from the bottom of the incinerator and placed in a dumpster, which was taken to the station landfill (sites 2, 5, and 6) until early 1985. Current wet ash disposal is at an off-station landfill. Approximately 6,260 cubic yards of wet ash and fly ash are generated yearly. Wastes generated by the incinerator are summarized in Table 7-3.

7.2 ORDNANCE. The processing and disposal of ordnance items at NAVSTA Mayport is conducted by Explosive Ordnance Detachment (EOD), Group Two-Detachment Mayport, located in Building 190. The operations commander of this detachment is the Commanding Officer, NAVSTA Mayport. Administratively, the detachment falls under Commander, EOD Group Two (COMEODGRU TWO), Fort Story, Virginia.

The mission of the EOD is to provide operational EOD capability as required for the location, identification, rendering safe, recovery, field evaluation, and disposal of all explosive ordnance including chemical and nuclear weapons, up to the high water mark of coastal and inland water areas and within the boundaries of all naval activities in the Atlantic Fleet. In fulfilling this mission, COMEODGRU TWO is assigned the following tasks and functions.

Task--1 Establish and maintain liaison with Atlantic Fleet-type commanders, naval area coordinators and cognizant bureaus regarding operational ordnance requirements, new developments, ordnance intelligence data, and all other areas related to explosive ordnance disposal.

Task--2 In accordance with priorities established by CINCLANTFLT, provide designated commands with qualified EOD detachments to meet operational requirements.

Task--3 Establish and maintain a high state of EOD readiness in the Atlantic Fleet through training and a system of uniform operational readiness inspections.

Task--4 Develop and provide EOD policies, directives and plans, as applicable, to all EODs in the Atlantic Fleet.

Table 7-3

Waste Generation from Station Incinerator, Naval Station Mayport, Florida

| SHOP NAME | BUILDING NUMBER | WASTE MATERIAL | WASTE QUANTITY (gallons/year)* | WASTE MANAGEMENT PRACTICES 1940 | 1945 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCINERATOR | 1430 | Wet Ash | 6,260 cubic yards | | | | | | | | | Station Landfill | |
| | | Metal Scrap | variable | | | | | | | | | Off-Station Contract Disposal | |

* All values in gallons per year unless otherwise noted.

Task--5 Provide logistic support to all EOD detachments in the Atlantic Fleet.

Task--6 Provide administrative and medical support to Norfolk, Virginia area EOD personnel.

Task--7 Provide training in emergency destruct procedures to LANTFLT ships.

Task--8 Provide a technical escort capability for chemical and biological agents or munitions to the Atlantic Fleet.

Task--9 Administer and provide support, upkeep, and facilities for the EODGRU TWO nuclear weapons training program, and fuction as the custodian of EODGRU TWO nuclear weapon training devices (Type 3B) and associated equipment.

Task--10 Evaluate proposed and existing EOD equipment and methods to include participation in assigned development projects.

Task--11 Particpate in the EOD Navy Training Plan (NTP) review process.

Task--12 Pursue in-service EOD recruiting.

Task--13 Conduct training in support of other Atlantic Fleet commands in emergency destruct procedures and demolition procedures for non-EOD personnel.

Task--14 Provide EOD advisory teams to train United States Allies.

Task--15 Conduct operational and administrative readiness inspections of EODGRU TWO detachments.

Task--16 Provide coordination for local EODGRU TWO diving, demolition, and parachuting training. Assist as required for operational commitments in these areas.

Task--17 Manage the EODGRU TWO General Military Training (GMT) Program. EOD Group Two-Detachment Mayport, provides EOD coverage for the station, and EOD support for Federal, State, and local agencies throughout northern and central Florida, and coastal southeastern U.S. for assigned mission areas at Naval activities throughout the Atlantic Fleet as required. Specific tasks for the detachment level include:

1. Explosive ordnance disposal services as required;

2. Diving and demolition services as required;

3. EOD coverage during movement of special weapons/chemical munitions;

4. Clearance of land masses and underwater areas of unexploded ordnance;

5. Participation in mine warfare exercises;

6. Participation in research and development projects;

7. Maintenance of a high state of operational readiness;

8. Pursue in-service EOD recruiting; and

9. Provides assistance to ships and stations in planning and conducting training in areas of fire fighting and damaage control involving explosives, explosive safety, disaster control, radiation monitoring, decontamination, emergency destruction procedures and search procedures for improved explosive devices (IEDs).

EOD Group Two-Detachment Mayport has provided EOD support at NAVSTA Mayport since 1977. Prior to that data, EOD Group Two-Cecil Field Detachment provided EOD support. On-station activities reportedly generate approximately 2,000 pounds per year of waste explosive items. This reflects the gross weight of explosives generated and stored. These waste explosives are transported to Camp Blanding, Florida (250 pounds explosives limit) and Pine Castle Gunnery Range, Florida (1,000 pounds explosives limit), where designated safe storage areas are provided. The exact location for explosives disposal at Camp Blanding and Pine Castle Gunnery Range are selected after consultation with the respective range control officers. These explosive disposal areas are located in the live-fire impact areas of Camp Blanding, Florida, and Pine Castle Gunnery Range, Florida. No dedicated EOD ranges are located at NAVSTA Mayport, Camp Blanding, or Pine Castle Gunnery Range, and no historical EOD ranges or disposal areas are known for NAVSTA Mayport.

Disposal of explosives occurs by burning (small arms and incendiaries) and detonation. EOD personnel police the selected disposal area (at Camp Blanding or Pine Castle Gunnery Range) following each detonation. Small quantities of low-volatile solutions (diesel fuel, JP-5, or kerosene) are used to ignite the dunnage when burning is selected as the disposal process to be used.

EOD-Detachment Mayport conducts approximately three trips per year for disposal of explosive wastes generated at NAVSTA Mayport. EOD-Detachment Mayport also has an explosive device container (10-pound capacity) located behind Building 190 for emergency disposal of small explosive quantities. No small-arms incinerators are located on the station. No chemicals are disposed of by EOD-Detachment Mayport.

# CHAPTER 8. DISPOSAL SITES AND POTENTIALLY CONTAMINATED AREAS

8.1 INTRODUCTION. This chapter presents the descriptions of the sites identified during the Initial Assessment Study (IAS) of Naval Station (NAVSTA) Mayport as those locations with potential for contamination. The findings and conclusions are presented in Chapter 2. The Confirmation Study Ranking System (CSRS) results and recommendations are presented in Chapters 2 and 3. The sites are not listed in order of CSRS ranking. All of the potential contamination sites at NAVSTA Mayport are shown in Figure 8-1 and described in Table 8-1. Estimates of the quantities of hazardous wastes and liquid industrial wastes disposed of at each site are presented in Table 8-2.

8.2 SITE 1: LANDFILL A. The Site 1 landfill is located under the area currently occupied by Jacksonville Shipyards, a tenant on NAVSTA Mayport (see Figure 8-2). The site was operated from 1942 to 1960 and was the original landfill on the base. The landfill operation consisted of digging approximately 18 trenches approximately 15 feet wide, eight feet deep, and 400 feet long (in increments) and disposing of waste materials into the trench. The landfilled materials were ignited at approximately 1500 hours Monday through Friday and allowed to burn. Items disposed of in the landfill included waste oils (potentially containing toxic metals), asbestos, paints (containing lead), toluene, mercury lamps, transmission fluid, hydraulic fluids, cleaning solvents, acid (sulfuric), lube oil, transformer oil, mercury, plating solutions, batteries, ship bilge, perchloroethylene, methylene chloride, pesticide cans [chlordane, heptachlor, 2,4-dichlorophenoxyacetic acid (2,4-D), dichlorodiphenyltrichloroethane (DDT), and others], magnaflux dye, penetrants, photo processing wastes, and sanitary wastes. The site has a 2 to 3-foot soil cover, and debris is not exposed to the surface. The landfill is approximately four acres. It was estimated that approximately 54,000 gallons per year of liquid industrial wastes was disposed of in the landfill. It was also estimated that 190,000 gallons of waste remained at the site, even after burning activities. Some of these liquid wastes were in drums; others were dumped directly into the fill area.

8.3 SITE 2: LANDFILL B. The Site 2 landfill is located under the current ordnance storage area, immediately north of the easternmost dredge spoil disposal area (see Figure 8-3). The landfill was operated from 1960 to 1964 and 1979 to 1980. The area is approximately two acres in size and up to eight feet deep. The trenches at this site were constructed by a dragline and were approximately 15 feet wide and 300 feet long (in incremental stages). The trenches intersected the water table, and items disposed of at this site were dumped into standing water. Combustible items that floated were burned daily. Items disposed of at this site included sanitary wastes, drums of waste oils (potentially containing toxic metals including lead) and mercury from ships and on-shore activities, asbestos, paints (containing lead), toluene, mercury lamps, transmission fluid, hydraulic fluids, cleaning

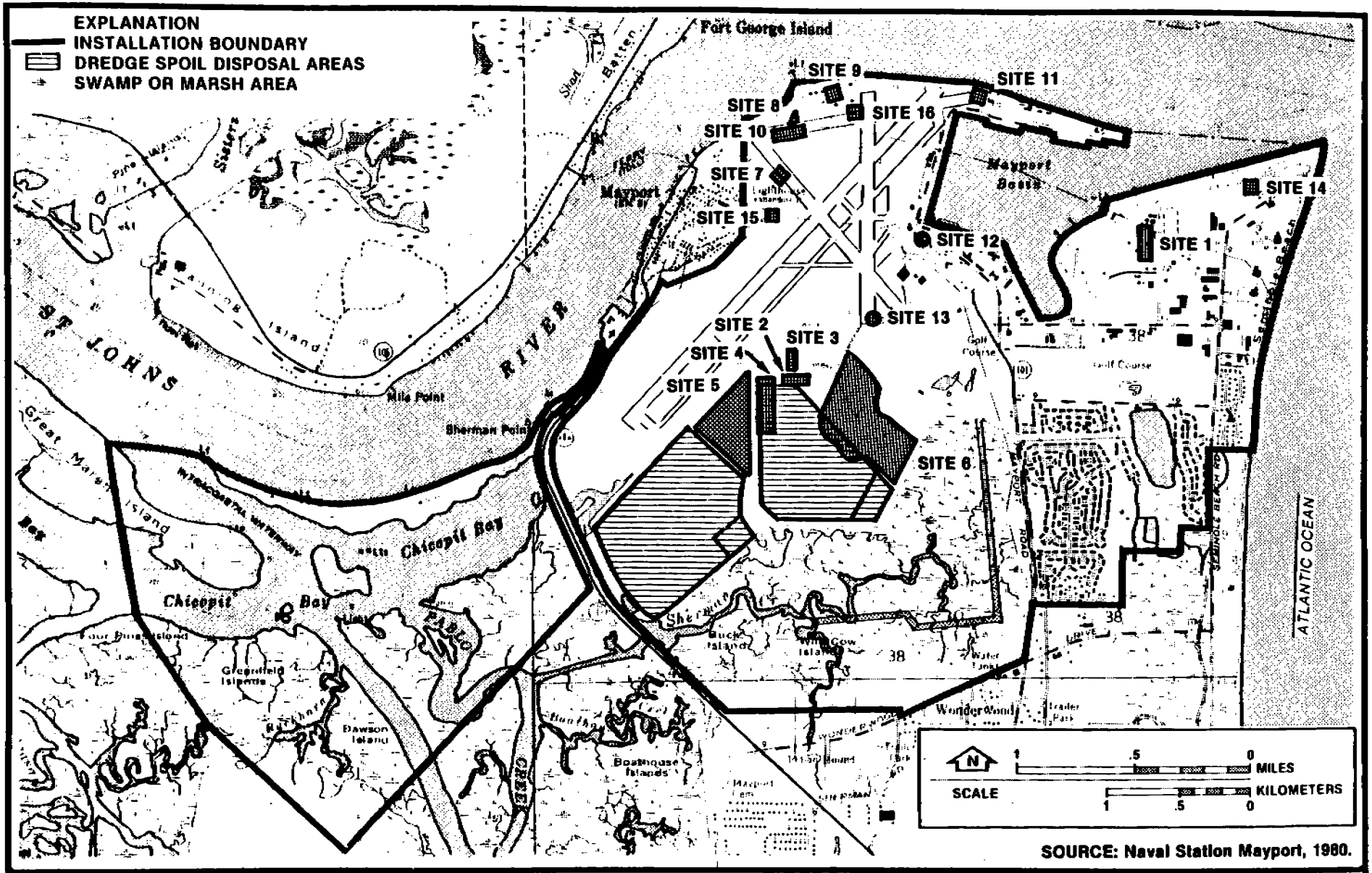



**Figure 8-1**
**LOCATION OF POTENTIAL CONTAMINATION SITES ON NAVAL STATION MAYPORT**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

Table 8-1

Description of Potential Contamination Sites
on Naval Station Mayport, Florida

| Site Number | Site Name | Year of Operation |
|---|---|---|
| 1 | Landfill A | 1942-1960 |
| 2 | Landfill B | 1960-1964, 1979-1980 |
| 3 | Landfill C | 1963 |
| 4 | Landfill D | 1963-1965 |
| 5 | Landfill E | 1963-1966, 1974-1980 |
| 6 | Landfill F | 1966-1985 |
| 7 | Hazardous Waste Storage Area | 1981-1985 |
| 8 | Waste Oil Pit | 1973-1978 |
| 9 | Fuel Spill Area | 1942-1985 |
| 10 | Defense Reutilization and Marketing Office (DRMO) Storage Yard | 1967-1980 |
| 11 | Neutralization Basin | 1970-1985 |
| 12 | Oily Waste Pipeline | 1942-1985 |
| 13 | Old Fire Fighting Training Area | 1973-1982 |
| 14 | Mercury/Oily Waste Spill Site | 1977-1985 |
| 15 | Old Pesticide Area | 1963-1964 |
| 16 | Transformer Storage Yard | Early 1950s-1985 |

Table 8-2

Summary of Estimated Liquid Industrial and Hazardous Wastes Disposed of at the IAS Sites on NAVSTA Mayport, Florida

| Site No. | Name | Years of Operation | Estimated Annual Quantity (gal) | Estimated* Total Quantity (gal) |
|---|---|---|---|---|
| 1 | Landfill A | 18 | 54,000 | 190,000 |
| 2 | Landfill B | 5 | 54,000 | 54,000 |
| 3 | Landfill C | <1 | 0 | 0 |
| 4 | Landfill D | 2 | 54,000 | 22,000 |
| 5 | Landfill E | 9 | 54,000 | 97,000 |
| 6 | Landfill F | 19 | 54,000 | 200,000 |
| 7 | Hazardous Waste Storage Area | 4 | <55 | <100 |
| 8 | Waste Oil Pit | 5 | 50,000 | 250,000 |
| 9 | Fuel Spill Area | 43 | <1,000 | 3,000 |
| 10 | DRMO Storage Yard | 13 | <50 | <200 |
| 11 | Neutralization Basin | 15 | <500 | <1,000 |
| 12 | Oily Waste Pipeline | 43 | 500 | 1,000 |
| 13 | Old Fire Fighting Training Area | 10 | 4,800 | 48,000 |
| 14 | Mercury/Oily Waste Spill Site | 8 | 500 | 4,000 |
| 15 | Old Pesticide Area | 1 | <55 | <55 |
| 16 | Transformer Storage Yard | 4 | <10 | <50 |

*Numbers may not equal the number of years of operation multiplied by the estimated annual rate.

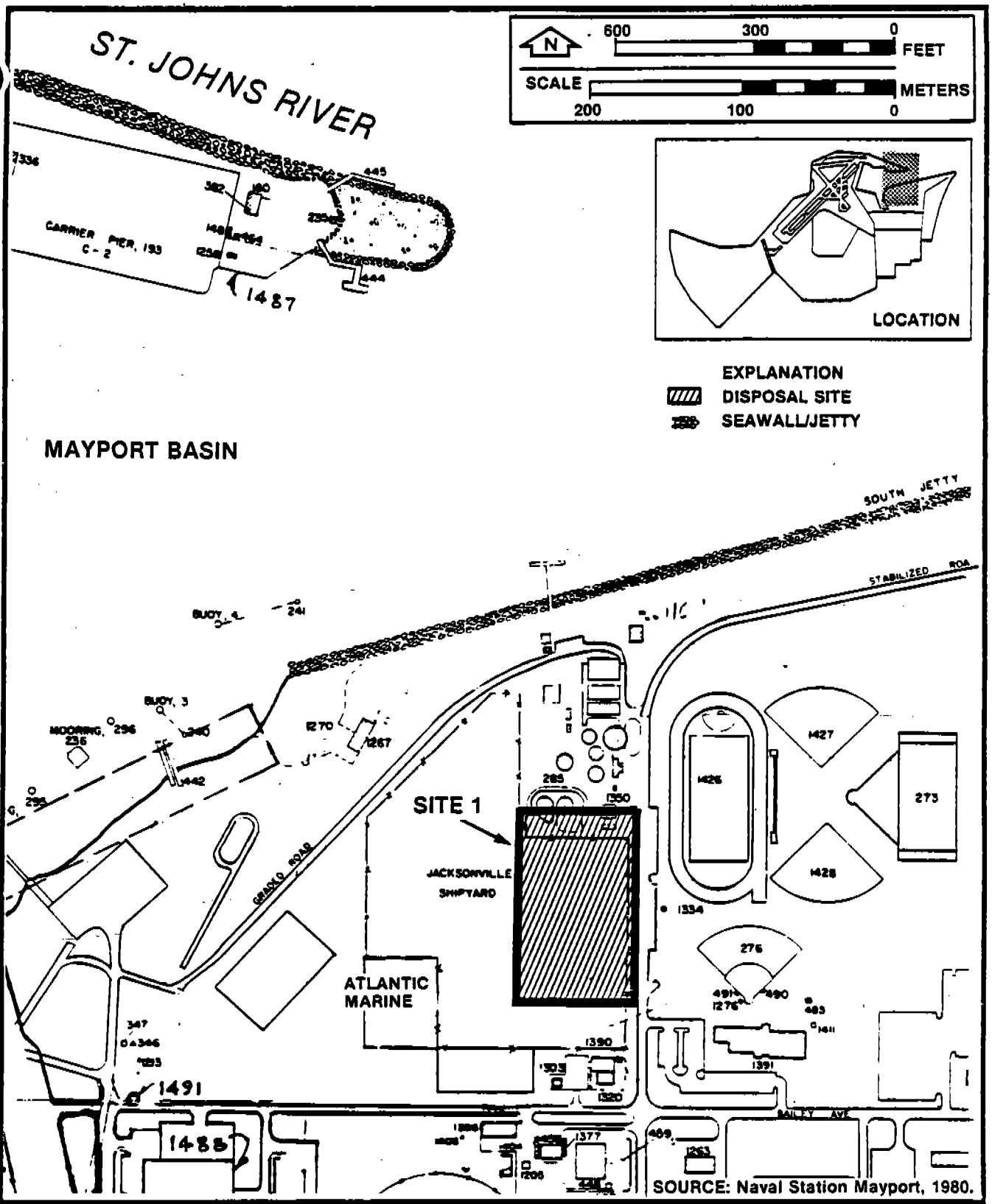



**Figure 8-2**
**LOCATION AND APPROXIMATE AREAL EXTENT OF SITE 1**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

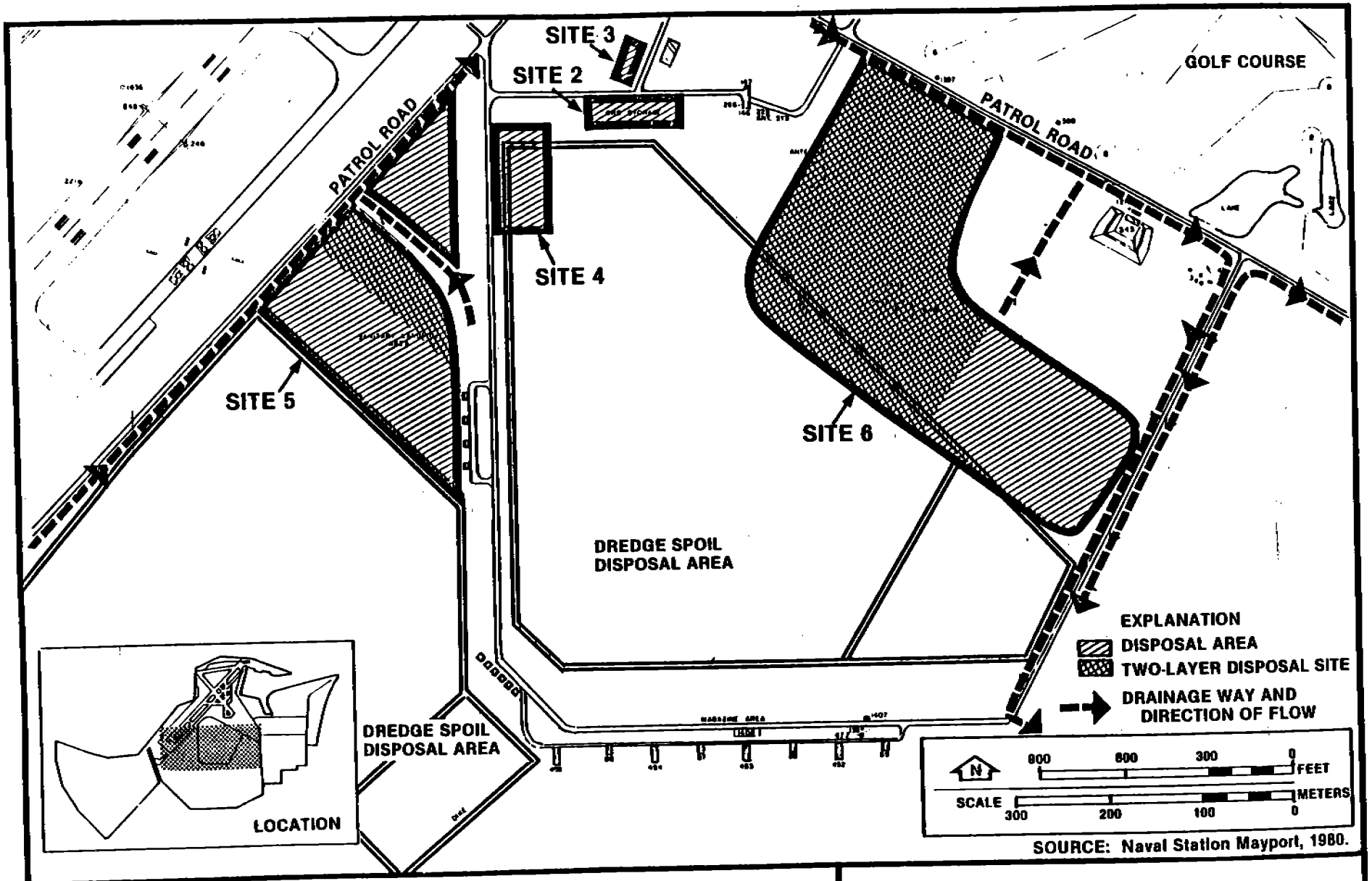



**Figure 8-3**
**LOCATION OF SITE 2, SITE 3, SITE 4, SITE 5, AND SITE 6**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

solvents (PD-680), acid (sulfuric), lube oil, transformer oil, mercury, plating solutions, batteries, ship bilge, perchloroethylene, methylene chloride, pesticide cans (chlordane, heptachlor, kepone, 2,4-D and DDT), magnaflux, photographic wastes, and penetrants. Some waste oil drums were recovered from the landfill and the recovered oil spread on the standing water to control mosquitoes. During the second use period (1979 to 1980), items for disposal were piled on the surface of the old fill area. These items were not ignited. The site is covered with approximately three feet of soil, and no debris is exposed to the surface. The site received approximately 54,000 gallons per year of liquid industrial and hazardous waste, with a total of approximately 54,000 gallons disposed of at the site. It was estimated that 20 percent of all liquid wastes remained at the site.

8.4 SITE 3: LANDFILL C. The Site 3 landfill is located north of Site 2 (see Figure 8-3). This landfill was used for a one-time disposal operation in 1963. The area is approximately 20 feet wide by 100 feet long by eight feet deep, or less than one acre in size. The only items reportedly disposed of at this site were scrap metals and construction materials removed from Navy property at Green Cove Springs, Florida. No hazardous materials were disposed at the site.

8.5 SITE 4: LANDFILL D. The Site 4 landfill is located west of Site 2 and extends under the northwestern corner of the easternmost dredge spoil disposal area (see Figure 8-3). The landfill was used for disposal operations from 1963 to 1965. The area covered by Site 4 is approximately three acres. The landfill consisted of a series of pits (estimated eight), each approximately 40 feet square and eight feet deep. The pits were constructed with a dragline. These pits intersected the water table, and items disposed of in the pits were dumped into standing water. Combustible items that floated were burned daily. Items disposed of at this site included sanitary wastes, drums of waste oils (potentially containing toxic metals including lead) and mercury from ships and shore activities, asbestos, paints (containing lead), mercury lamps, transmission fluids, hydraulic fluids, cleaning solvents, lube oil, mercury, transformer oil, plating solutions, batteries, ship bilge, perchloroethylene, methylene chloride, pesticides (2,4-D, heptachlor, kepone, DDT, and others), magnaflux, penetrants, and photographic solutions. Some waste oil drums were recovered from the pits prior to ignition, and the oil from the drums was spread on standing water in marsh areas on the station to control mosquito larvae. The site is well covered with soil, and no debris is exposed to the surface. The site received approximately 54,000 gallons per year of liquid industrial and hazardous waste, and a total of approximately 22,000 gallons (or 20 percent after burning) remained at the site.

8.6 SITE 5: LANDFILL E. The Site 5 landfill is located west of Site 4, outside the northeastern corner dike of the dredge spoil disposal area (see Figure 8-3). This site consists of two areas. Both areas were operated for the disposal of waste materials in trenches from 1963 to

1966 and for aboveground disposal of construction materials from 1974 to 1980. The landfill areas consisted of a series of trenches (estimated 12) approximately eight feet deep, 15 feet wide, and 750 feet long (in increments). The site covered an area of approximately 11 acres. The trenches intersected the water table and were constructed by a dragline. Items disposed of in the below-ground area included waste oils (potentially containing toxic metals including lead and mercury) from ships and other operations, asbestos, paints (containing lead), toluene, mercury lamps, transmission fluid, transformer oil, hydraulic fluids, cleaning solvents, sulfuric acid, lube oil, ship bilge, perchloroethylene, methylene chloride, pesticides (2,4-D, heptachlor, chlordane, DDT, and others) magnaflux, photographic wastes and penetrants, and sanitary wastes. The areas were reportedly burned daily to reduce the volume of buried materials. Drums of waste oil were reportedly recovered from the landfill area and used on standing water to control mosquito populations.

A drum disposal pit was reportedly located in the westernmost section of the landfill. This area was used to drain liquid industrial wastes from drums. The contents of the drums are unknown, but reportedly came from the ships.

The site received approximately 54,000 gallons per year of liquid industrial and hazardous waste. It is also estimated that 97,000 gallons remained at the site.

Two monitor wells were installed adjacent to the drainage ditch on the north side of the site during a study conducted in 1983 (Geraghty and Miller, 1983). An analysis of the shallow aquifer gave no indication of contaminants in the ground water. The number of wells involved in the study may have been insufficient and not strategically located to intercept the ground water migrating from the landfill area.

8.7 SITE 6: LANDFILL F. The Site 6 landfill is located east of the easternmost dredge spoil disposal area on NAVSTA Mayport (see Figure 8-3). The landfill operated from 1966 to 1985 and consists of items buried in trenches and covered, followed by a second above-surface disposal activity. The landfill is approximately 34 acres in size and extends under a portion of the northeastern dike of the dredge spoil disposal area. The landfill was constructed in a marsh area by a dragline digging trenches approximately 15 feet wide, eight feet deep, and up to several hundred feet in length. The trenches intersected the water table and contained standing water during the underground disposal phase of the landfill operations. Items disposed in the landfill included waste oil (potentially containing toxic metals such as lead) and mercury from shipboard and on-shore activities, waste solvents (chlorinated and nonchlorinated), paints (containing lead), sanitary wastes, and construction rubble. The site received approximately 54,000 gallons per year of liquid industrial and hazardous wastes with a total of 200,000 gallons disposed of at the site.

This site was identified in a recent study (Geraghty and Miller, 1983) as an area where potential hazardous wastes could migrate in the ground water. Two monitor wells were installed. Ground water samples were analyzed, and no contaminants were found; however, a stand of pine trees east of the site are yellowing and drying, which may be indicative of contaminants in the ground water migrating away from the present monitor wells and toward the stand of trees.

8.8 SITE 7: HAZARDOUS WASTE STORAGE AREA. The former hazardous waste storage area, operated from 1981 to 1985, is located near Building 1380 on the western side of the station (see Figure 8-4). The storage area is located on an abandoned runway and is approximately 0.1 acre in size. The area is fenced and secure. Previous items stored at the site have included PCB, waste oils (potentially containing cadmium, lead, and nickel), and solvents (chlorinated and nonchlorinated). In addition to serving as a hazardous waste storage area, the site was the location of former fire fighting training activities. Waste oil (containing toxic metals), solvents (containing chlorinated and nonchlorinated compounds), and clean fuels were burned at the site. Several areas in the compound where the items were stored are stained and discolored as a result of small leaks and spills in the area. A new hazardous waste storage area, including a building, has been constructed at another location on the station. It is estimated that less than 100 gallons of waste oils and solvents were spilled at the site between 1981 and 1985.

8.9 SITE 8: WASTE OIL PIT. The waste oil pit is located on the western side of the station in the vicinity of the fuel farm and adjacent to the St. Johns River (see Figure 8-5). The site, operated from 1973 to 1978, was used to store oily bilge water. The oils contained in this waste permeated the soils of the pit or overflowed into the St. Johns River. The pit was almost triangular in shape, had a surface area of approximately 7,500 square feet, and was approximately six feet deep. Approximately 50,000 gallons of oily bilge water per year, or a total of approximately 250,000 gallons, was disposed of at the site. In addition, several thousand gallons of waste oil (potentially containing lead, cadmium, and mercury) were also disposed of at this site.

Two ground water monitor wells were installed near Site 8 on the shore of the St. Johns River. Analysis of the ground water did not indicate the presence of any toxic or hazardous materials. Well placement may not have been in areas where ground water contaminants from the pit would have been intercepted.

8.10 SITE 9: FUEL SPILL AREA. Site 9 is located in the fuel farm area north and west of Tanks 201 (see Figure 8-5). This site was recently identified when four soil borings of four to 15 feet in depth were made as part of a road construction plan. Three of the four soil borings produced soils that smelled strongly of fuels. The source of the fuels is unknown, but a leak in one of the buried tanks or transfer lines is

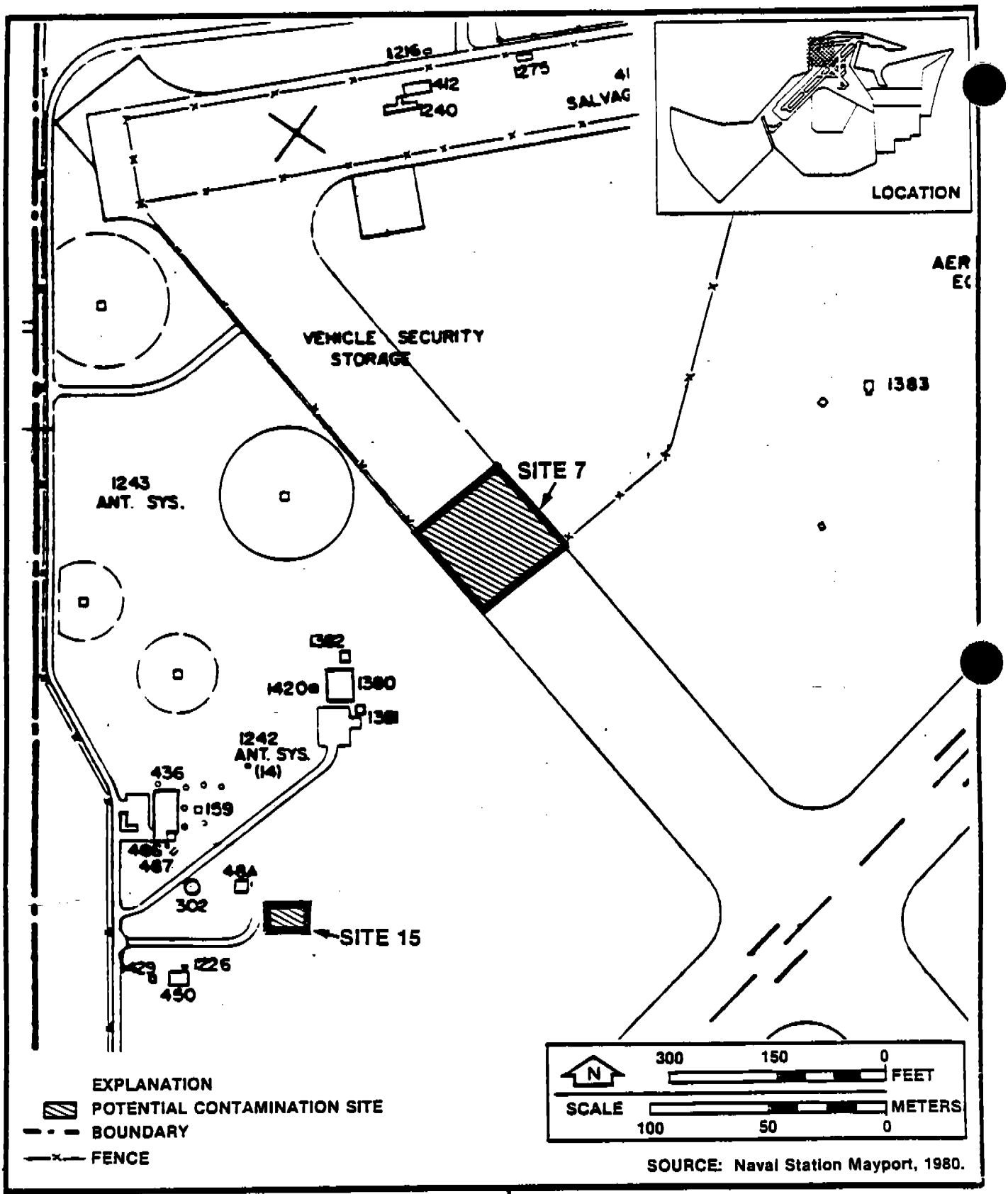



Figure 8-4
LOCATION OF SITE 7 AND SITE 15

INITIAL ASSESSMENT STUDY
NAVAL STATION
MAYPORT, FLORIDA

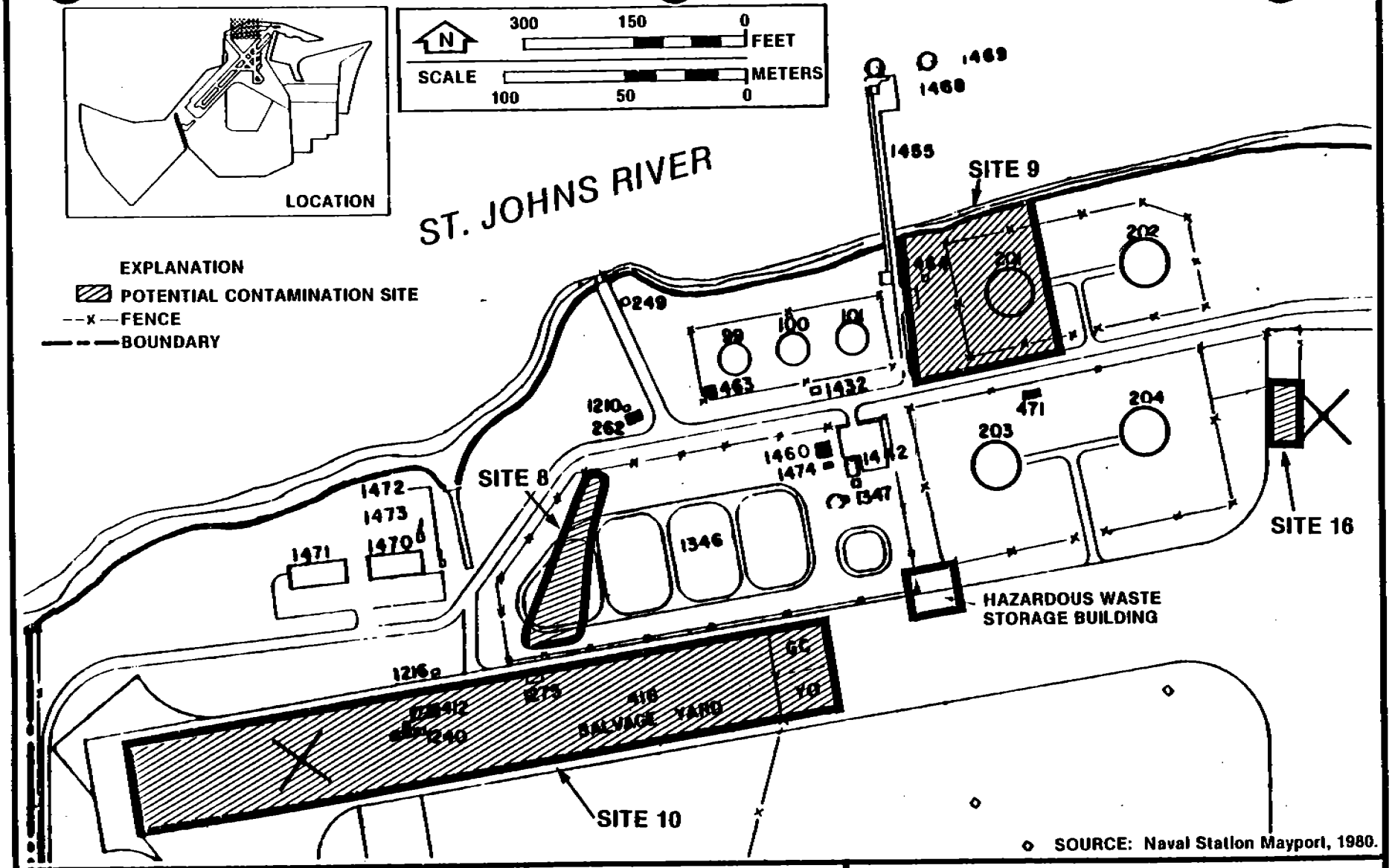



Figure 8-5
LOCATION OF SITE 8, SITE 9, SITE 10, AND SITE 16

INITIAL ASSESSMENT STUDY
NAVAL STATION
MAYPORT, FLORIDA

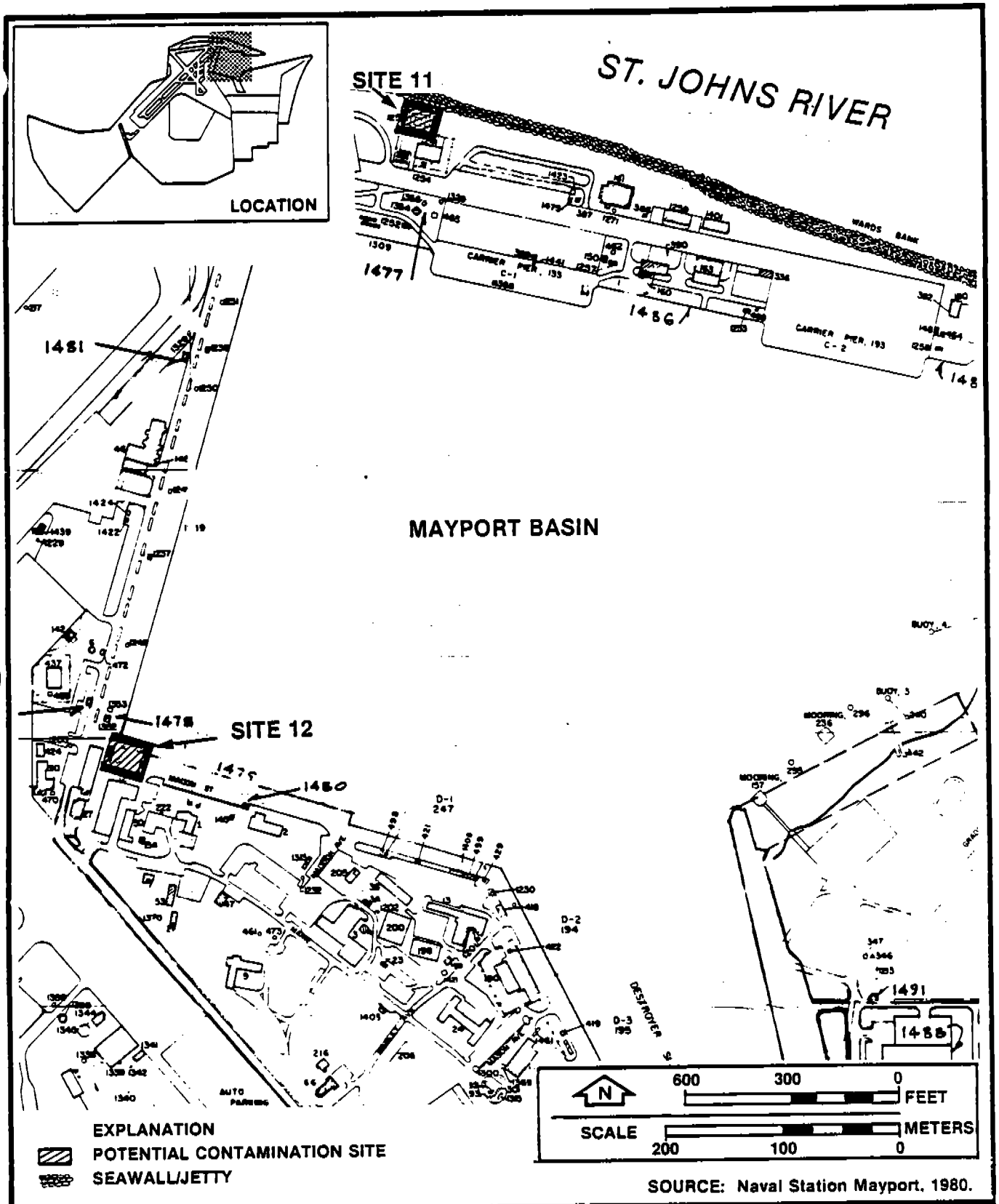
suspected. The fuel is supected to be either JP-5 or diesel fuel-marine (DFM). It is estimated that approximately 300 gallons of fuel has leaked at the site.

8.11 SITE 10: DEFENSE REUTILIZATION AND MARKETING OFFICE STORAGE YARD. DRMO [formerly known as the Defense Property Disposal Office (DPDO)] storage yard is located south of Site 8 along a section of abandoned runway (see Figure 8-5). From 1967 to 1981, this site was used for the storage of out-of-service transformers (potentially containing PCB) and solvent drums. Although no large spills were reported (all less than five gallons), oils from some of the transformers leaked at the site. Leakage was estimated at less than 50 gallons during operation of the site for waste storage. In addition, some of the solvent drums deteriorated and leaked solvents (chlorinated and nonchlorinated) into the soils near the site. The total quantity of solvents and oils spilled or leaked at the site during storage operations was estimated at less than 200 gallons.

8.12 SITE 11: NEUTRALIZATION BASIN. The Site 11 neutralization basin is located behind Building 1241 and adjacent to the St. Johns River (see Figure 8-6). The site was constructed to neutralize boiler blowdown wastes from the boiler plant at Building 1241 prior to discharge into the river. In addition to boiler wastewaters, wastewaters from ships and other sources have been dumped into the basin for neutralization. The source of these wastes and their potential hazardous nature is unknown, but it is estimated that battery acids, solvents, and dilute mercuric and chromium wastewaters from ships have been disposed of in the basin. The liner of the basin has leaked in the past, and materials diposed of at the site have entered the soils beneath the basin. It is estimated that a total of approximately 1,000 gallons of hazardous materials may have leaked through the basin liner into the underlying soils.

8.13 SITE 12: OILY WASTE PIPELINE. The oily waste pipeline is located in the pier area near Building 38 (see Figure 8-6). It was reported that oil was seeping into the Mayport basin. An investigation in the area indicated that the oily waste pipeline was leaking. The oily soils around the leak were excavated, the leak was repaired, and cleean soils were used as fill material. Occasionally, oil is still detected in the stormwater drainage system near the site, and oil also seeps into an underground electrical conduit system. This oil is probably from residuals in the soils that were not detected and were removed during initial cleanup activities. The quantity of oily wastes that entered the soils around the site and length of time the leak existed are unknown, but it is estimated that less than 1,000 gallons of oily wastewater leaked into the soils of the area. The amount of oil remaining in the surrounding soil after cleanup is estimated to be only a few gallons.

8.14 SITE 13: OLD FIRE FIGHTING TRAINING AREA. The old fire fighting training area is located under the parking lot of the new Aircraft Intermediate Maintenance Department (AIMD) Building (see Figure 8-7).




SOURCE: Naval Station Mayport, 1980.

**Figure 8-6**
**LOCATION OF SITE 11 AND SITE 12**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

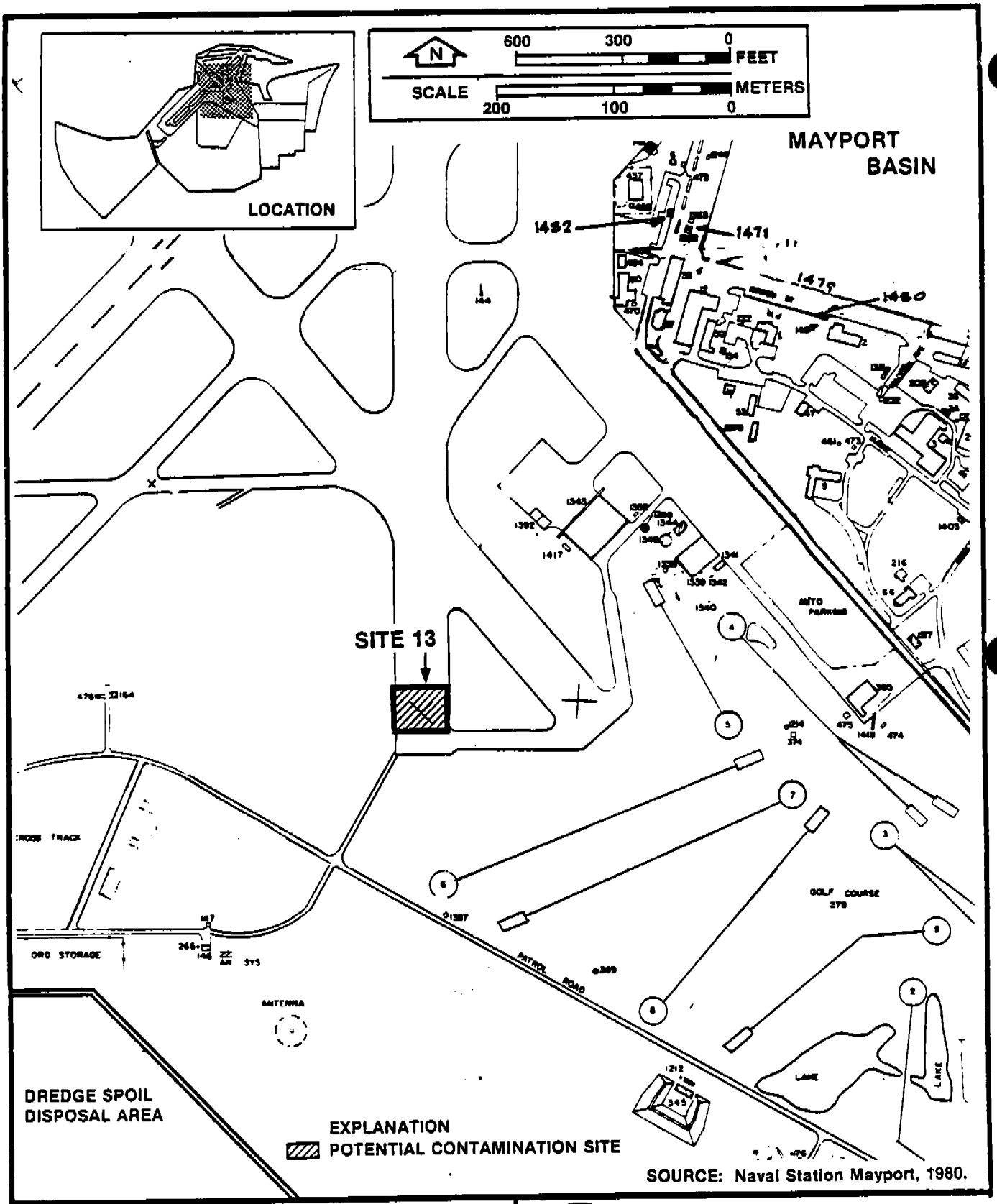



**Figure 8-7**
**LOCATION OF SITE 13**

**INITIAL ASSESSMENT STUDY**
**NAVAL STATION**
**MAYPORT, FLORIDA**

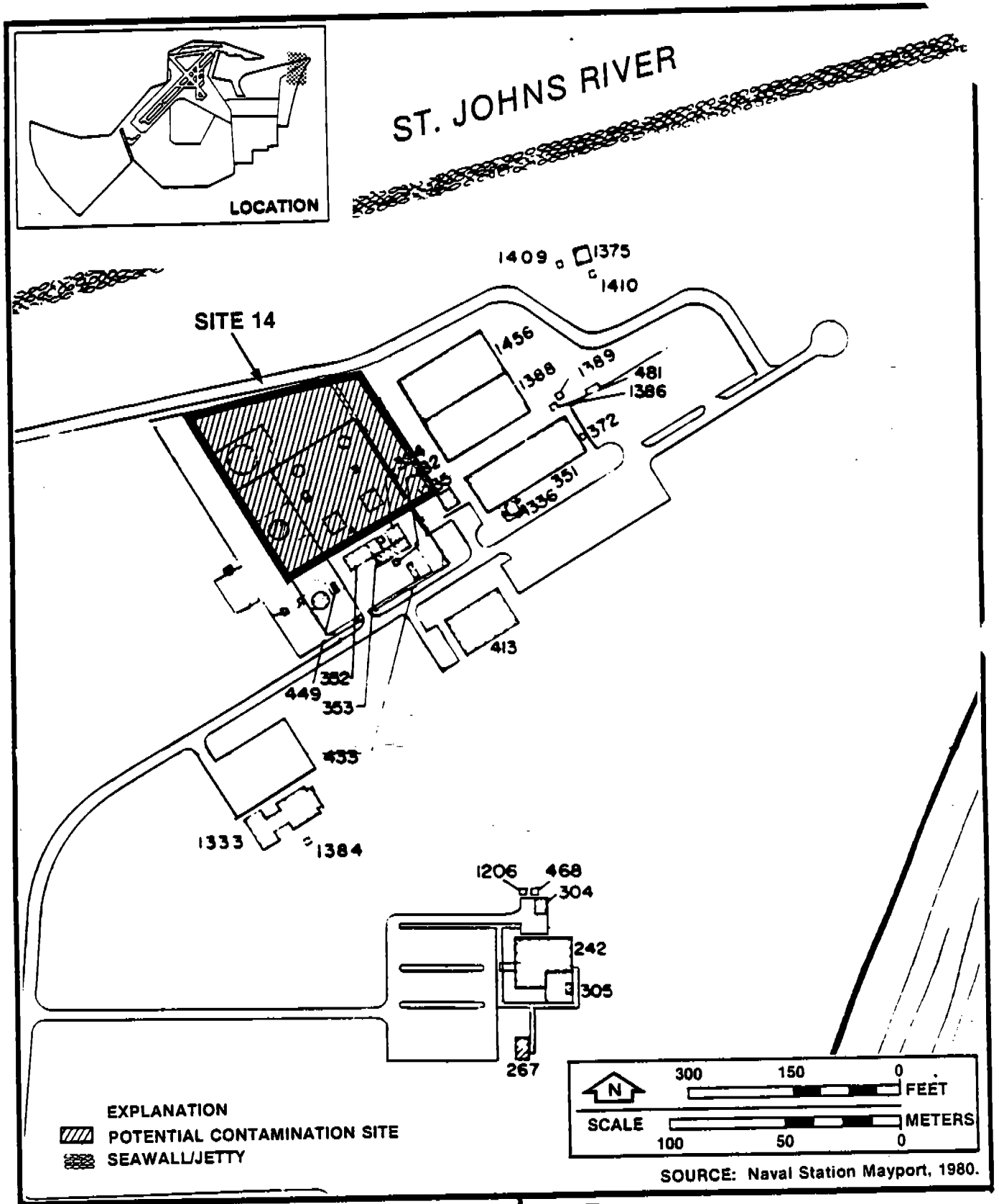



Figure 8-8
LOCATION OF SITE 14

INITIAL ASSESSMENT STUDY
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Site 13 was used from 1973 to 1982. The training area was constructed on the asphalt of an abandoned runway and was contained within a low earthen berm. Materials disposed of at the site included waste oils (potentially containing toxic metals, including lead and mercury), solvents (chlorinated and nonchlorinated), transformer oil (unknown if it contained PCB), JP-4, JP-5, AVGAS (containing lead), and other fuels. Materials not burned during the training activities remained in the pit or ran off the sides of the old abandoned runway. No evidence of soils contaminated with oily wastes was observed around the fringes of the parking lot during the on-site assessment. It is estimated that approximately 4,800 gallons per year of fuels (90 to 95 percent AVGAS, JP-4, or JP-5) was used in training exercises. It is estimated that 90 percent of the fuels was burned and 10 percent was uncombusted during the training process. A total of approximately 4,800 gallons of fuel spilled or remained in the soils of the site.

8.15 SITE 14: MERCURY/OILY WASTE SPILL SITE. Site 14 is located near the easternmost point on NAVSTA Mayport, just west of the Fleet Training Center, Building 1456 (see Figure 8-8). The site is located on and adjacent to the concrete pad used to conduct fire fighting training activities. The site has been used for fire fighting training activities since 1978. In the past, four 55-gallon drums containing mercuric wastes were stored on the pad. These drums developed leaks due to the corrosivity of the wastes. The mercury solution leaked onto the concrete and flowed off the pad into the adjacent soils. It is estimated that 200 gallons of mercury-containing solutions entered the soils of the area as a result of the leaking drums.

Also, an oil-water separator connected to the fire fighting training pit has malfunctioned in the past and overflowed several times. These oily wastes have contaminated the soils directly behind Building 1456. Although clean fuels are now used for training, waste oils (containing lead, mercury, and chlorinated and nonchlorinated solvents) were used during the first year of operation. It is estimated that approximately 4,000 gallons of oily wastes has been spilled at the site.

8.16 SITE 15: OLD PESTICIDE AREA. The old pesticide area was located in former Building 484 on the western side of the station (see Figure 8-4). The site was in use from 1963 to 1964. Pesticides and pesticide applicators were stored in a shed attached to the southwestern corner of the building. The shed had a wooden floor, and any pesticides that were spilled went directly into the soils. Pesticide mixing and formulating activities were conducted at the job site. The cleaning of spray equipment by washing occurred adjacent to the south and west sides of former Building 484. Rinse waters went directly onto the ground and into the soils. It is estimated that less than 55 gallons of pesticides were spilled on the soils at the site.

8.17 SITE 16: TRANSFORMER STORAGE YARD. The transformer storage yard is located east of Tank 204 in the fuel farm area (see Figure 8-5). This

area has been used for the storage of out-of-service transformers. The area is located on the asphalt surface of an abandoned runway. Various transformers have leaked small quantities of fluid in the area. Although the majority of the transformers were non-PCB (PCB-containing or PCB-contaminated transformers were generally stored at Site 7 or Site 10), a few may have contained PCB. It is estimated that less than 50 gallons of transformer oil leaked at the site.

## APPENDIX A

## LIST OF GOVERNMENT AGENCIES CONTACTED

Department of Defense Explosives Safety Board (Alexandria, VA)

Federal Archives and Records Center, Archives Branch (Atlanta, GA)

Florida Game and Fresh Water Fish Commission (Tallahassee, FL)

National Archives and Records Service, Navy and Old Army Branch (Washington, DC)

Naval Facilities Engineering Command, Southern Division (Charleston, SC)

Naval Historical Center (Washington Navy Yard, Washington, DC)

U.S. Geological Survey (Tallahassee, FL)

Washington National Records Center (Suitland, MD)

# APPENDIX A

## LIST OF GOVERNMENT AGENCIES CONTACTED

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# APPENDIX B

# LIST OF ABBREVIATIONS

APPENDIX B
LIST OF ABBREVIATIONS

| | |
|---|---|
| AG | aboveground |
| AIMD | Aircraft Intermediate Maintenance Department |
| AMHAZ | Hazardous Materials Handling |
| AVGAS | aviation gasoline |
| °C | degrees Celsius |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| CNO | Chief of Naval Operations |
| COMEODGRU TWO | Commander, Explosives Ordnance Detachment Two |
| CSRS | Confirmation Study Ranking System |
| 2,4-D | 2,4-dichlorophenoxyacetic acid |
| DDT | dichlorodiphenyltrichloroethane |
| DFM | diesel fuel-marine |
| DOD | Department of Defense |
| DPDO | Defense Property Disposal Office |
| DRMO | Defense Reutilization and Marketing Office |
| EDTA | ethylene diamine tetra acetic acid |
| EFD | Engineering Field Division(s) |
| EOD | explosives ordnance device |
| EP | Extraction Procedure |
| EPA | U.S. Environmental Protection Agency |
| EQSD | explosives quantity safety distance |
| °F | degrees Fahrenheit |
| gal | gallon(s) |

| | |
|---|---|
| GMT | general military training |
| GSE | ground support equipment |
| IAS | Initial Assessment Study |
| IED | improved explosive device |
| lb | pound(s) |
| MOGAS | motor vehicle gasoline |
| NAS | Naval Air Station |
| NAAS | Naval Auxiliary Air Station |
| NACIP | Navy Assessment and Control of Installation Pollutants |
| NAVFACENGCOM | Naval Facilities Engineering Command |
| NAVSTA | Naval Air Station |
| NEESA | Naval Energy and Environmental Support Activity |
| NEPSS | Naval Environmental Protection Support Service |
| NEX | Naval Exchange |
| NSC | Naval Supply Center |
| NTP | Naval Training Plan |
| NTU | nephelometric turbidity units |
| PCB | polychlorinated biphenyls |
| POL | petroleum, oil, and lubricants |
| PVC | polyvinyl chloride |
| PWD | Public Works Department |
| SAR | search and rescue |
| SIMA | Shore Intermediate Maintenance Activity |
| SOUTHNAVFACENGCOM | Southern Division Naval Facilities Engineering Command |

| | |
|---|---|
| TOC | total organic carbon |
| TOX | total organic halogens |
| UG | underground |
| USGS | U.S. Geological Survey |

# APPENDIX C

## SITE MAP OF NAVAL STATION MAYPORT